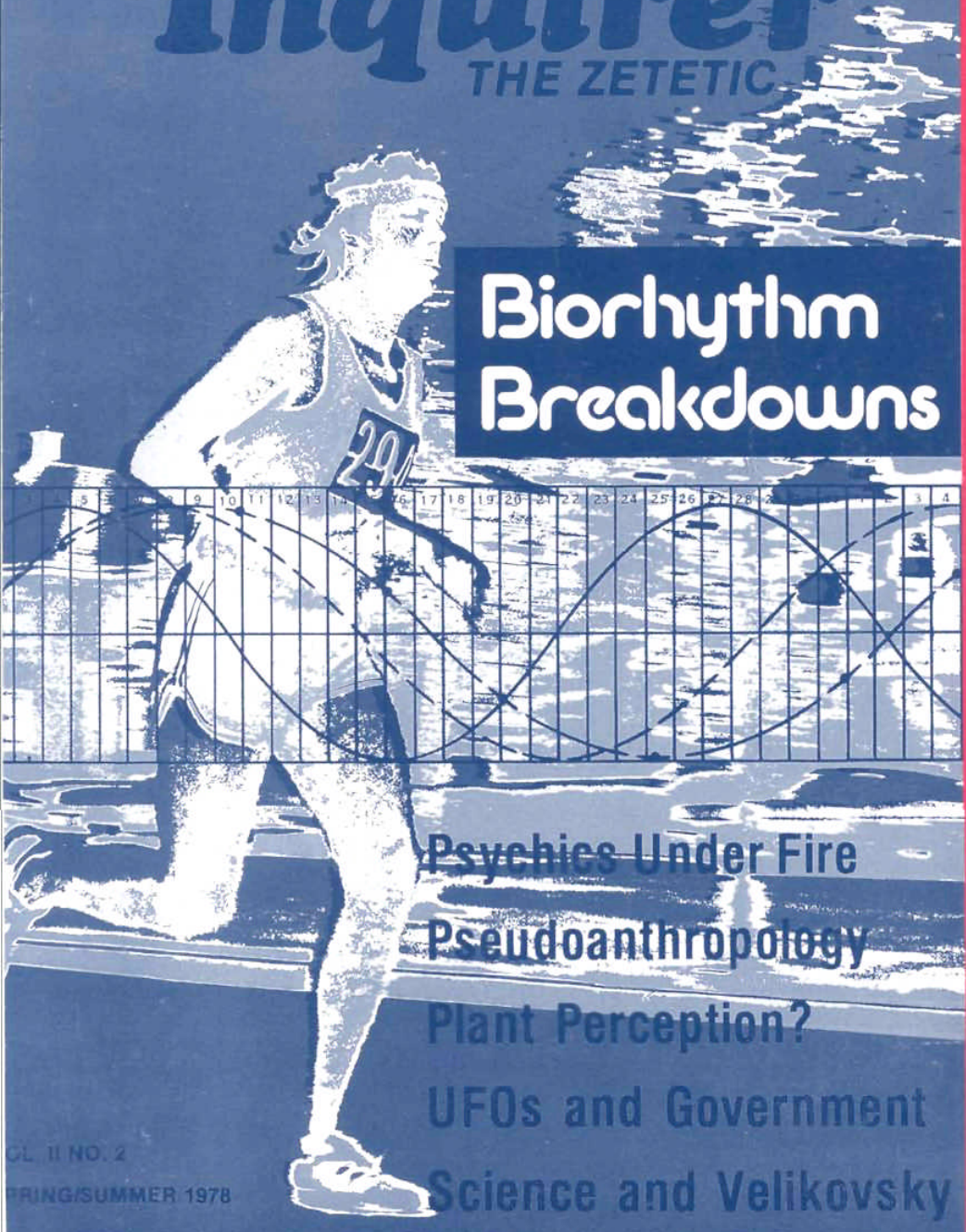
the Skeptical Inquirer

THE ZETETIC



Biorhythm Breakdowns

Psychics Under Fire

Pseudoanthropology

Plant Perception?

UFOs and Government

Science and Velikovsky

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the Skeptical Inquirer

THE ZETETIC

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3 NEWS AND COMMENT

18 PSYCHIC VIBRATIONS

25 SPECIAL REPORT

Tests and Investigations of Three "Psychics," *by James Randi*

New Evidence in the Uri Geller Matter

Exit Jean-Pierre Girard

The CSICP Conducts a Test of Psychokinesis

ARTICLES

40 Biorhythms: Evaluating a Pseudoscience, *by William Sims Bainbridge*

57 Plant Primary Perception: The Other Side of the Leaf, *by John M. Kmetz*

62 Anthropology Beyond the Fringe, *by John R. Cole*

72 NASA, the White House, and UFOs, *by Philip J. Klass*

82 A Second Einstein ESP Letter, *by Martin Gardner*

BOOK REVIEWS

84 Donald Goldsmith, ed., *Scientists Confront Velikovsky* (George O. Abell)

90 John White and Stanley Krippner, eds., *Future Science: Life Energies and the Physics of Paranormal Phenomena* (Paul Kurtz)

95 Jay Anson, *The Amityville Horror* (Robert L. Morris)

102 *The World Almanac Book of the Strange* (James Randi and Kendrick Frazier)

105 Jeffrey Goodman, *Psychic Archaeology: Time Machine to the Past* (John R. Cole)

108 Joseph K. Long, ed., *Extrasensory Ecology: Parapsychology and Anthropology* (Richard de Mille)

112 Donald H. Menzel and Ernest H. Taves, *The UFO Enigma* (Robert Sheaffer)

114 Carlos Castaneda, *The Second Ring of Power* (Richard de Mille)

116 Zecharia Sitchin, *The 12th Planet* (James E. Oberg)

118 K. E. Krafft, *Traite d' Astrobiologie*, and Edmund Van Deusen, *Astrogenetics* (Michel Gauquelin)

FEATURES

129 From the Editor

130 From the Chairman

133 From Our Readers

143 Contributors

Artwork: p. 13 by James Randi. *Photos:* p. 14 by R. C. Globe; p. 33 by Bernard Dreyfus; p. 37 by James Randi.

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News and Comment

A university controversy on paranormal teachings

How should a university scientist respond when another member of the faculty teaches occult ideas and beliefs that seem to have little if any scientific verification? For that matter, how should the university itself react?

Just such a situation has become a subject of local and statewide controversy at Iowa State University. How often such situations occur in the academic world is not clear. What makes this case unusual is that the scientist has mounted a yearlong campaign to bring the issues before the university and the public and to strongly challenge the psychic claims and teachings of his colleague.

The subject of the controversy is David A. Weltha, an associate professor of family environment at Iowa State. Weltha believes in astrology, seeing visible auras, reincarnation, life after death, astral projection, and ESP. These ideas have become a part of his classroom teaching. In the spring quarter of 1978, for example, Weltha is conducting a seminar class titled "Your Former Lives," whose stated purpose is "to explore the meaning of life through the reincarnation theory and regression techniques" and to prepare students "for experiencing regression."

John W. Patterson, professor of engineering in the university's Materials Science and Engineering Department, has been waging battle against Weltha's claims. Patterson was motivated to become involved after reading an article a year ago in the *Iowa State Daily* describing Weltha's claim to be able to see visible auras around

people. Weltha claimed to be able to tell definite things about a person's personality from the color of his aura. He stated that the aura vibrates with a person's thoughts. And he described how, in class, he teaches students to see auras.

Patterson countered with a letter, printed in the paper, proposing an experiment to test Weltha's claim. He suggested that Weltha be brought into a totally dark room containing ten persons and be asked to determine each person's location by his aura. Weltha declined: "I have seen auras but I do not see them regularly. They are constantly changing but are not visible in the dark." The battle was on.

At other times Weltha has spoken of the urgency of carrying out research on the soul and has made such statements as: "We are all miniature magnetic fields that are replicas of what took place in the universe at the time of our births."

Patterson believes he and other faculty members have a responsibility to challenge Weltha's claims. Articles and editorials about Weltha's teachings, and about the dispute, have appeared in the *Des Moines Sunday Register*, the *Ames Daily Tribune*, and frequently in the *Iowa State Daily*. Patterson has a thick sheaf of correspondence with Weltha and various university departments and with others in his campaign to challenge Weltha's teachings.

"If the breakdown of critical judgment in the public at large is alarming," says Patterson, "the similar breakdown on university campuses must be viewed as more alarming still. After all, responsible scholarship, which demands critical thinking and caution in judgment, should be the hallmark of the university community."

Patterson is concerned about the reputation of the university. "I fear that our reputation may be called into question if we appear incapable of distinguishing between thoughtful analyses and scholarship on the one hand and the presentation of irrational ideology on the other."

Patterson says that at first he was highly antagonistic but now merely feels that Weltha's claims should be openly challenged. He refers to Weltha's work as "sloppy scholarship" but has tried to keep the debate focused on principles and issues rather than on personalities. Both parties have tried to avoid name-calling and to keep the dispute on a certain level of civility.

Most of Patterson's fellow faculty members have remained publicly silent on the issue. (Patterson says he does have considerable "closet support.") "Some of them

think that once a person is gullible there is no need to deal with him anymore. . . . This aloof attitude made the situation fertile for students to believe that the ideas are unchallengeable. It is only when we question ideas that the students will be forced to weigh the issues and come to a decision and not just swallow what is presented."

Weltha, for his part, contends that just because what he teaches is outside the realm of empirical science doesn't mean it is not valid. "Our department is concerned with the whole person, not just his logical mind. We study his emotions, his aspirations, and his potential. And his potential includes some transcendent functioning, beyond what the rational mind thought possible. People are not just matter that you can study like physics."

Patterson has tried to obtain from Weltha's department head and other university offices a list of Weltha's scholarly publications, if any. He has been unsuccessful. He has found none listed in citation indexes. But Weltha does not claim to do research: "I'm not a researcher. I'm simply a conveyor of information to the students and it is very controversial. I don't teach anything I haven't lived or believed in myself. I feel anything, like astrology, that expands students' understanding and awareness of themselves is appropriate."

Patterson's repeated attempts to obtain some substantive support from the university administration have met little success. "In fact," Patterson told the *Skeptical Inquirer*, "the silence from the administration is getting kind of spooky." The assistant vice-president for academic affairs stated that such issues "should be resolved by intellectual confrontation" and "the administration should do its best to avoid interfering." The faculty council refused to take up the issue. The head of Weltha's Department of Family Environment acknowledges that Weltha has included astrology as part of the material in his courses but contends that he "is not dogmatizing the astrology part. . . . As far as we can determine, there is no violation of students' rights."

Several state legislators have entered the controversy. One said that teaching reincarnation with state funds was wrong. But another said he could not object, for reasons of academic freedom.

Weltha, like Patterson, has tenure at the university, and both agree that Weltha's right to teach what he pleases is protected by academic freedom. "And," says Patterson, "my right to criticize is similarly protected." It is for these reasons, Patterson says, that the

most appropriate and respectable option available is "participation in open and vigorous debate." He desires that Weltha's views be openly aired, and challenged.

So far Weltha has declined invitations to engage in face-to-face debate, either with Patterson or with psychologist Ray Hyman of the University of Oregon, who was to come to the campus in May at Patterson's invitation to address these kinds of issues.

"Debate in no way abrogates academic freedom or the tenure of any individual," says Patterson. He says he wants students and the public to be aware of accurate scientific perspectives regarding Weltha's claims. And he hopes that "the embarrassment of defending preposterous claims" will be a deterrent to "sloppy scholarship and the future hiring of impostors."

—Kendrick Frazier

Good test, bad results

In the *Journal of the Society for Psychical Research* (December 1977) appears a report from Carl L. Sargent, of the Department of Experimental Psychology, University of Cambridge, dealing with a set of experiments using the "psychometric" powers of a Mrs. Athene Williams. Sargent says that a first, informal set of experiments was done for a radio program in March of 1977. The tests were tape-recorded for later transmission on the Radio 4 outlet; but according to the experimenter, "the experimental conditions were not sufficiently well-controlled" and he therefore drew no conclusions. Very wise and quite proper. Yet Radio 4 *used* the recording they made, and "in transmission, all qualifying remarks [Sargent] made concerning experimental conditions were cut out."

In addition, Sargent reports that "during the recording of the final part of the programme I was denied the opportunity to test Mrs. Williams under strict conditions. . . ."

However, Sargent later (in June 1977) was able to test Mrs. W. under proper conditions, and his protocol for these tests deserves some attention—as does the final analysis of the results. He obtained 12 pictures of persons who were obviously either old or young (it appears that Mrs. W. does well with such targets) and of different sexes. He determined the composition of the 12 pictures using a random-number table, and they were then sealed into opaque envelopes, flanked with heavy cardboard. The envelopes were randomized by another person, who made a record of the randomization. Sargent then signed each

across the flap and further sealed each with transparent tape over his signature.

The envelopes were tested for see-through properties and found safe. Attempts were made to apply oils or alcohol to them to make them transparent. They passed this test, too. And weight was found to offer no clues. Effectively, these precautions provided excellent targets for testing a "psychic."

The envelopes were given to Mrs. W. one at a time and in order. Sargent reports that he "would then record her impressions and her final guess concerning the age and sex of the person shown on the concealed picture." No envelopes were opened until all guesses were made and recorded.

So far, pretty good. The one weakness I find here is that Sargent recorded "her impressions and her final guess." *Her impressions were not part of the test*—the guess about age (old or young) and sex (male or female) *was* the goal of the test. It is far too easy—and tempting—to look back over the records and find significance in something that was *not* an announced goal. If her "impressions" had been part of the test, the protocol (i.e., the judging standards) would have had to be carefully designed and implemented, and decided and announced *in advance.*

Mrs. W. did not do too well, in my estimation. She hit 4 out of 12—while chance would call for 3 out of 12 (for hitting both sex *and* age; it would have been 6 of 12 for just sex *or* age). Considering the very small (and understandably so) number of trials, the results are not significantly positive, any more than 2 of 12 would have been significantly negative.

But Sargent has a different view. He says, "This remains a significant score." Why? Because, he reports, "I had planned to analyze not only direct-hitting but also +1 and −1 displacement, since Mrs. Williams had shown some possible displacement tendencies in the informal pre-test." This needs some clarification: to look for a "+1 displacement," the target *ahead* of the one Mrs. W. was trying to guess is examined. To look for a "−1," the target *behind* is used, as if it were the one she was trying for. Thus, effectively, this provides her three times as many chances of having winning results in a test! Sargent explains that "Mrs. W. had shown some possible displacement tendencies," but he does not say whether these were +1 or −1 in direction—or a combination of both!

Note, too, that Sargent errs if he uses *any* data from the first set of uncontrolled tests as a basis for design in the formal tests, though

this is a common malpractice in parapsychology.

Let's look at the figures in table 1.

Sargent accepts the −1 displacement figures because they are very significant. Chance calls for 2.75 correct guesses in 11 tries, and Mrs. Williams got 7 correct; this is 2.54 times as many "hits" as she might have by chance alone. But take a look at the bottom line. Here, she has scored only .364 of chance! Are *we* allowed to quote *that* figure if we wish to prove Mrs. W. has *no* powers?

Simply put, unless an entire protocol is described in advance—including, of course, the intended judging procedures—one cannot come to a proper conclusion. The editor of *JSPR* and the author of the piece apparently did not intend this to be taken as a regular scientific paper, since it was included in the "letters" section. But Sargent's label of "a significant score" is hardly justified, in light of the very small number of trials; it is not possible to find anything here but "interesting" results.

Sargent devised and conducted a good test; in his analysis of the results, he reached too far.

—James Randi

Justice by horoscope

Ever since it became evident that the uncritical acceptance of paranormal powers and supernatural influences was penetrating even the system of justice in the United States (see "Psychics in the Courtroom," *The Humanist*, July/August 1977), the CSICP has attempted to have various bar associations take a stand concerning this development. To date, no satisfactory reply has been received. The bar associations apparently prefer to let matters stand, and show little interest in the evidence that sorcery is once again back in court.

Perhaps the reason lies in a startling revelation proudly acclaimed in the pages of *Ebony* (February 1978). The magazine

Table 1

−1 displacement	7 correct	4 incorrect*
direct hits	4 correct	8 incorrect
+1 displacement	1 correct	10 incorrect*

*Only 11 guesses are used in the +1 and −1 displacement reports, since one guess in each case does not have a following or preceding target for comparison.

reports that a giant step forward in the treatment of juvenile offenders has been introduced by Cleveland's Judge Leodis Harris, who "reads a teen-ager's horoscope during court session before deciding how the youth will be reprimanded for his offense." And, says the article, his "use of astrology has gone over big with colleagues as well as the offenders."

Elected to the bench last November as Ohio's first black juvenile-court judge, Harris admits that as a child he often scolded his mother for reading her horoscope. But he was instantly converted to belief when he chanced upon an astrology book and looked up the horoscope for a juvenile he was about to confront and read the negative part of the child's prognostication. "This thing described the kid to a tee!" says Harris, and he used it in court.

Ebony reports that Judge Harris's court dispenses "good, hardnosed advice . . . and an occasional dose of astrology." This seems a strange mixture of the rational and the irrational, and hardly a suitable philosophy for a responsible member of the bar.

One wonders whether there would be good grounds for a reversal of a sentence based upon the use of witchcraft in the courtroom. And consider the case of Phil Jordan, the magician/psychic who was appointed an officer of the court in Binghamton, New York, and is consulted when Public Defender Miller chooses a jury. Jordan eschews astrology, however, preferring the much more logical method of analyzing the "auras" of prospective jurors to determine if they will be sympathetic to the defendant.

And the bar associations sit back while superstition and magic tricks take over the lives of those brought before the law, innocent or guilty.

—J.R.

Council finds NBC lax

The National News Council has upheld essential portions of a complaint of alleged bias and distortion in the syndicated television program "In Search of the Bermuda Triangle," shown on many NBC-TV stations.

The council found two out of three complaints of specific factual inaccuracies in the program to be warranted. But perhaps more important, the council addressed the more general issue of network responsibility for programs not produced by network news departments but nevertheless presented in documentary format and making specific factual claims. It found the network's performance lax.

The program, part of the "In Search of . . ." series, was produced by Alan Landsburg Productions, Inc., of Beverly Hills, and purchased by NBC. The complaint was filed by Robert Sheaffer, a member of the CSICP.

The Council notes that the NBC law department questioned the council's decision to get involved in an entertainment program. The program, claimed NBC, "was quite clearly not presented as news or public affairs."

"But," said the council, "the record fails to clarify that it was not so presented in the light of the original documentary listing [in *TV Guide*], advertising for the program, and the format of the program itself. The fact that a program such as this was not prepared by a news department is not something that is readily evident to the casual viewer."

NBC said its files of viewer reactions "do not indicate any confusion about the entertainment nature of the series." But the council countered that it believes "that the manner of its promotion and presentation was an invitation to such confusion." The advance material that led to *TV Guide*'s labeling the program a documentary was provided by Landsburg Productions. "Surely, NBC, as the purchaser of such a program, should have reviewed such material," said the council. "The Council believes that NBC was lax in its oversight of this program." (As a result of the problem with this program and other such "pseudodocumentaries," *TV Guide* has now adopted a policy of either not giving them any label or labeling them "drama" or "speculation."

The News Council established a valuable precedent—that such programs should be held to the same standards of factual accuracy as news programs: "NBC says the program 'clearly was not presented as news or public affairs.' The Council . . . does not believe that things were quite that clear. Since programs such as this employ the same techniques as news or public affairs documentaries—interviews; location filming; actual, rather than fictional, people—the Council will apply the same standards of accuracy to them that it applies to broadcast news and public affairs programs."

Applying these standards, the council found two of the three charges of inaccuracy warranted. One was the claim that the Navy submarine *Scorpion* disappeared in the supposed Bermuda Triangle in 1968. In fact, it disappeared near the Azores, nowhere near the "Triangle." The other was the claim that no trace was ever found of a PBY search aircraft sent to look for the five planes of Flight 19

lost off Florida in 1945. In fact, the search aircraft, a PBM not a PBY, was seen to explode in mid-air, and an oil slick and debris were found.

The decision of the National News Council (One Lincoln Plaza, N.Y., N.Y. 10023), rendered January 31, 1978, was concurred in by all nine of its members.

—*K.F.*

Complaints against NBC

The Committee for the Scientific Investigation of Claims of the Paranormal has been continuing its efforts to encourage more balanced coverage of science on network television. In February, committee chairman Paul Kurtz wrote to William T. Abbott, senior counsel in NBC's law department, declaring as unacceptable a response Abbott had made to Committee complaints about the NBC program "Exploring the Unknown" (see our last issue, Fall/Winter 1977, p. 15). The Committee disputed as unsatisfactory NBC's position that the program was entertainment and that short disclaimers were enough to compensate for the overall impression given in the program that its materials were scientifically warranted. It disagreed with NBC that the program was "scientifically balanced." Ten specific instances of "highly questionable" or scientifically distorted segments of the program were cited.

The letter reiterated the Committee request that NBC and its affiliated stations provide an opportunity for the contrasting viewpoint to be presented.

The Committee also requested from NBC and the general managers of its affiliated stations a determination of the applicability of the fairness doctrine to the Committee's criticisms. This action was recommended by the Federal Communications Commission as a necessary step before the FCC could become involved in the dispute.

—*K.F.*

Astrology and astronauts

"Incredible 10 of 43 Astronauts Share Same Astrological Sign" headlined the *National Enquirer*, claiming that fully one-fourth of NASA's spacemen were Pisces—"an incredible 571 to 1 long shot," wrote author Bernard D. A. Scott (Oct. 11, 1977).

Asked to explain it, noted astrologer Sybil Leek discovered that Pisces people "are drawn to the space program like bees to honey." It was inevitable that Pisces people be in such numbers: "Once they make up their minds to attain the impossible job of an astronaut they pour incredible

dedication and work into the task . . . Nothing can stop them from reaching the goal they have decided on. That is why there are so many Pisces astronauts."

The *Enquirer* story was based on an announcement by John Holway in Washington, D.C. Perhaps he was also born under a lucky sign. He left out "Deke" Slayton, another Pisces, which makes his case even better.

But Leek's rationalization sounds like the old "shoot-the-arrow-and-paint-the-bull's-eye-around-it" trick, since she was obviously told the results beforehand and was able to "justify" the correct answer. A double-blind test might have been more revealing.

NASA's selection of thirty-five new astronauts in January 1978 provided just such a test. Of the thirty-five, only one is a Pisces. Perhaps Ms. Leek will adapt a trick from psychic research and call this effect "astro-missing."

Of course the astrologers will score points with the credulous when they discover that two of the new astronauts were born on the same day—Oct. 27, 1946. But aside from being astronauts, the men are very different. Steven Nagel is an air force officer and test pilot, while Terry Hart has a Ph.D. in engineering and is a civilian employee of Bell Telephone Laboratories. While mentioning coincidences, a third astronaut (Robert "Hoot" Gibson) was born three days later and came into the program as a navy carrier pilot.

Further statistical analysis of astronaut birth dates reveals other amazing results. Of thirty-six Soviet astronauts, five are Pisces—but five others are Cancer and five more are Sagittarius. Of thirty NASA rookie astronauts, three are Pisces but five are Libra. Of air force astronauts (twenty-two selected), one was a Pisces but an astounding five were Sagittarius.

Perhaps Sybil Leek can explain how Soviet space training, or air force space programs, "fine tune" the influence of the stars. I'm sure she can also tell us why seven new astronauts (20 percent of the total) are Scorpios.

But there is one thing she can't explain: of the Soviet cosmonauts and the NASA rookies, through 1977, a total of sixty-six people, *no two of them* have the same birthday.

The incredible odds against this are 525 to one. The only explanation is that a cooperative program in Moscow and Houston is deliberately excluding astronaut and cosmonaut applicants whose birthdays coincide with the birth dates of already-hired spacemen. That *is* logical, isn't it, Ms. Leek?

—James E. Oberg

The levitation "miracle" at Shivpuri

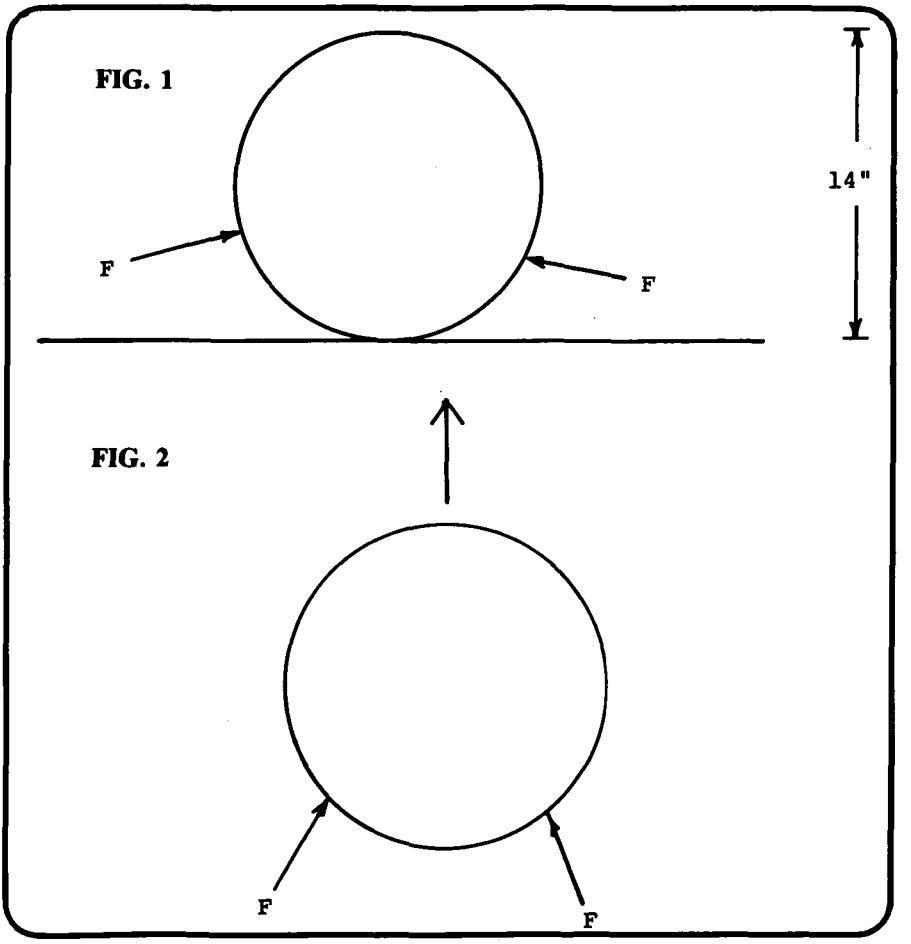
When Philip Morrison, the book editor of *Scientific American* magazine, heard about a remarkable demonstration that was said to take place in a temple courtyard near a small town in India, he was curious enough to ask questions of a firm of scientists and engineers located in Bombay. Their director, Mr. R. C. Globe, was familiar with the phenomenon, and replied fully to Morrison's inquiry.

We produce here Mr. Globe's reply to Morrison:

I thank you for your letter . . . with reference to the stone lifting at Shivpuri. As requested, herewith details of this supposed and mysterious power which it is said and believed lifts the stone ball.

I give some of the details which you may find interesting.

The mausoleum contains the body of a saint, a Muslim named "Kamarali Darvesh" who died about 700 years ago. There is always a Muslim in attendance to satisfy the curiosity



of visitors to witness the "unaccountable and mysterious" lifting of a round stone ball which stands the larger of two on the ground adjacent to the entrance of the "Durgah," the Urdu name for the word "mausoleum."

This ball of basalt (or sandstone, which is lighter) is about 14 inches in diameter and thus weighs about 140 pounds. Visitors must not attempt to influence the "spirit" which is said to lift it unless there is an odd number of men, i.e., 5, 7, or 11, no women being allowed to join the solemn (?) proceedings. The men gathered round the ball are then instructed by the attendant to touch the ball with one finger and when he gives the signal by voice, the men must shout in a loud voice in unison, the name of the saint, i.e., "KAMARALI DARVESH," but in a drawling tone of voice, when the stone will lift of its own accord; mark you, with the forefinger of each man still touching it.

The mausoleum is outside a small village, Shivpuri, about 16 miles from Poona, in the State of Maharashtra, Western India. I visited the place purposely to see this lifting by a mysterious power which is attributed to a divine entity, but failed to connect it with the "spirit" of the dead saint.

By mathematical calculation the stone weighs about 140 pounds so that 9 men pushing with one finger exert a force of about 15.5 pounds each, sufficient to lift the stone without any exertion or apparent effort. This of course is not believed by any Indian; they insist that it is the *Unknown Power* which does the lifting. No amount of discussion will move this belief out of their minds.

I don't believe that the joining up of ectoplasm supplied by each member of the group is responsible for lifting up of the stone ball.

To add to Mr. Globe's account may seem superfluous, but some interesting physical facts should be made clear. When the ball is resting on the ground, any force applied as shown (*F*) will tend to make it roll, unless exactly countered by an opposite and equal force. With a number of persons crowded about the ball, such equal pressure all around seems unlikely. Therefore, the ball will tend to roll in one direction or another.

Levitation "miracle" at Shivpuri.

Now it is not clear from the account given just what instructions are provided by the attendant present to supervise the miracle. If he gives the men reason to believe that their forefingers must maintain firm contact with the ball, conditions for it to begin rolling are optimum. There is no doubt in the minds of the faithful at this manifestation that the ball is now moving by divine force. To keep in touch with the ball is now more difficult, and each pushes harder, so that the small push necessary is delivered readily, and up goes the ball.

As the ball rises, the angle at which each person applies pressure will change, and the ball should accelerate, since the individual pressures are resolved into a much more direct upward push.

—*J.R.*

The "psychic" and the museum

Two members of CSICP, Paul Kurtz and James Randi, appeared recently on television in Toronto and were told that they would be meeting a prominent "psychic" who has been said to have unique powers. According to the psychic, the Royal Ontario Museum had authenticated her ability to merely look at an ancient artifact and immediately state the origin, history, and use of that artifact. She claimed a considerable reputation for this power, and the program people said she had been called in for consultation many times by the museum when they were puzzled about the function of an artifact.

However, when J.R. agreed to bring a genuine, known antiquity with him for evaluation, the "psychic," Rita Burns, expressed doubt about the wisdom of an appearance with such a challenge. And by the time the program was ready for taping, she had announced that there was no need to further test her powers. They had, she said, "been fully authenticated at the Royal Ontario Museum."

That didn't sound quite right. Since the museum has a reputation around the world for careful work and scholarship, it was decided to make a few phone calls. The first call, to the museum public relations office, drew a blank. They had "never heard" of such a person, but they'd check and call back. Later that day, they did call back, and they suggested that the story might have originated with a newspaper piece by Frank Jones at the *Toronto Sunday Star*. He was called, and was amused at how far the story had developed. He referred the CSICP to several other sources, some back at the museum, and then the whole tale unfolded.

It turns out that Rita Burns

had *not* been consulted by the museum. She had been taken there by Jones to test her ability. The museum officials had reluctantly agreed to cooperate and showed Rita a few samples from their undisplayed pieces. She correctly identified the country of origin and the function of a couple of pieces; and for one strange artifact, she gave a function that, to quote Associate Director Barbara Stephen, "might or might not be true." The other pieces, shown to her from the extensive Chinese collection, were identical with other items already on display; according to another employee of the museum any schoolchild who had spent thirty minutes in the room could have correctly identified them.

"Lots of people arrived with her," said one of the museum people. "She went to the Graeco-Roman section and tried to interest the curator. He was not at all interested. One article she identified as a fake. It might be—that's all I can say." The Canadian Broadcasting Corporation went to the museum with Rita, but lost interest when they determined the situation.

Professor J. Norman Emerson, of the University of Toronto, was said to have certified Rita's powers, but, because of illness, he was unavailable for comment. However, one fact is unarguable: the Royal Ontario Museum has not in any way authenticated or endorsed Rita Burns as a genuine psychic able to identify artifacts.

—*J.R.*

In brief

● With biorhythm theory much in vogue, a team of aviation and safety experts studied the possibility of a relationship between pilots' biorhythms and aircraft accidents. The study was carried out by the Armed Service Institute of Pathology, the National Transportation Safety Board, and the Federal Aviation Association's Office of Aviation Medicine. Their conclusion: Biorhythms play no role in aircraft accidents.

● Another negative study of biorhythm theory is reported by John W. Shaffer of the Johns Hopkins School of Medicine in the January 1978 *Archives of General Psychiatry*. Shaffer used data from 205 highway crashes in which the drivers had been found to be clearly at fault and checked the days of occurrence against the supposed "critical" days in the drivers' "biorhythm cycles." Shaffer's conclusion: No evidence of a link between the purported critical days and highway crashes.

● For those who worry that

newspaper readers are far more interested in occult subjects than in science and other substantial matters, readership studies conducted by the Newspaper Advertising Bureau bring some encouraging news. Reporting on them in an editorial in *Science* (December 9, 1977), Clyde Z. Nunn, senior project director for the bureau, noted that, in 1971, 47 percent of a wide range of listed newspaper topics had a greater readership than science. But by 1977, only 26 percent of the same topics received higher reader-interest ratings than science and invention. In the 1977 study, the national sample of adults was also asked how much space they would give to thirty-four different subjects if they could tailor a newspaper to their own interests. Nunn reports that "articles on mysterious events, psychic predictions, astrology, and horoscopes were near or at the bottom of the list." Those under thirty were no more likely than older persons to give as much space to astrology, mysterious events, and psychic predictions.

● L. Ron Hubbard, the American who founded the Church of Scientology, was sentenced by a court in Paris on February 14, 1978, to four years' imprisonment and fined 35,000 francs for fraudulently obtaining funds. The judge said that Hubbard's organization obtained money under false pretenses. Hubbard missed his trial. He was tried in his absence, as were the former heads of the French section of the church. The judge issued a warrant for the arrest of Hubbard, who was said to be living on his yacht somewhere in the Atlantic.

● The *Columbia Journalism Review* chided the National News Council for taking up four columns of space in the *Review* (which prints the Council's reports verbatim) to explore charges of inaccuracy in UFO stories in the *National Enquirer* (see our Fall/Winter 1977 issue). Says *CJR*: "Trying to establish standards of accuracy for the *Enquirer* is like setting up a dress code for a nudist colony."

—*K.F.*

Psychic Vibrations

Sir Eric M. Gairy, Prime Minister of Grenada, a tiny island nation in the Caribbean, is a firm believer in UFOs; he claims to have seen one himself. For years, Gairy has been telling anyone who would listen how important it is that the investigation of UFOs get top priority treatment immediately. This past fall, Gairy braved the hazards of a trip through the Bermuda Triangle to travel to New York to address the United Nations General Assembly, proposing that the UN set up a special agency to study UFO sightings. The *New York Times* reported that as Gairy spoke to the half-empty assembly hall, "the atmosphere was one of somnolence"; more diplomats appeared to be greeting friends or preparing dispatches than listening with rapt attention as the way was prepared for the great quantum leap in science. To build enthusiasm among the delegates, Gairy invited them to a showing of the much-hyped film, *Close Encounters of the Third Kind.* Eagerly awaiting the all-important vote, the tabloid *National Enquirer* reported that "initial reaction seemed favorable at UN headquarters." But when Grenada's proposed UFO agency came to a vote, out of the other 148 member nations of the UN, only one voted with Grenada—Idi Amin's Uganda.

* * * * *

Speaking of *Close Encounters*, we reported last time on some of Columbia Pictures' pre-release promotional gimmicks. After the movie was out, Columbia unleashed a veritable blizzard of promotional hype. Among the more outrageous is an essay contest for students in grades 6 through 12. "You are about to encounter intelligent life from outer space. You may ask one question." In fifty words or less, "you must think of a single question that you would ask a being from space and explain why you would ask that question." The winner gets a four-day, all-expenses-paid trip to Hollywood, accompanied by a chaperone *and* by his or her teacher. The booby prize is a CE3K poster. *More*, the media magazine, reports that Columbia is also providing teachers with UFO "study kits," to help bring UFO fables into the class-

room (and dollars into Columbia's pockets). In addition, they have established a Close Encounters club, which for just $5 not only brings you a regular newsletter with news of the latest sightings but also makes you eligible to have the account of your very own close encounter published! The massive publicity blitz is having its desired effect. *Time* magazine reports that the Smithsonian Astrophysical Observatory, which doesn't care a fig about UFO sightings, has nonetheless suffered a 200 percent increase in the number of telephone UFO reports since the movie's release. But the real bonanza has been at the Center for UFO Studies, in Evanston, Illinois, whose director, J. Allen Hynek, served as technical advisor for CE3K. The UFO center, which just happens to have UFO publications for sale, reports that since the movie opened their mail has soared a whopping 1,500 percent.

* * * * *

Ronald L. Jones, of rural Anne Arundel County, Maryland, bought a new pickup truck in August 1977. But one night when the truck was only three weeks old, he brought it home with "several long deep scatches and two large dents on the right side," reports the *Washington Post*. "The rear bumper on the right side was slightly ajar from the truck's body." Did he damage the new truck, of which he was so proud, through careless driving? Absolutely not, says he—it was a "monster" that caused all the trouble. It seems that Mr. Jones was driving westbound on a country road at about 9:30 in the evening when he reportedly espied a creature "7½ to 8 feet tall, 400 to 500 pounds. It stood erect on two legs (hind) and was covered with long dark-brown hair. It had a strong, pungent odor about it." While some might cower before such a fearsome spectacle, or flee with all deliberate speed, the fearless Mr. Jones stopped his truck, ran after the monster, and began attacking it with a tire iron. This good deed completed, he hurried back to his truck. But not fast enough, for the monster caught up with him, and left his monster marks all over the formerly new truck. The police to whom Jones reported the incident were less convinced. One of them suggested privately that this was the kind of story "that one concocts when one scratches up a new truck and is embarrassed about it." But many area residents take their local monsters seriously, and they're not laughing. "We haven't even made the first payment on that truck," Mrs. Jones protested. "You gotta believe us."

* * * * *

Watches and clocks were restarting and cutlery was bending—or so it seemed—all over Spain in Decem-

ber. The occasion was the Day of Innocents, Spain's equivalent of our April Fool's Day. A "Professor Mendoza," claiming remote-acting psychic powers, appeared on television and had thousands of people calling the station declaring that the promised miracles of watch-starting and silverware-bending had indeed taken place. But the joke was on them. The mysterious professor revealed that he was, in reality, José Diaz, president of Spain's Magician's Society. He had no psychic powers whatsoever. A vivid example of mass popular credulity.

* * * * *

The ad begins, "100 acres of rich scenic land can be yours. . . ." Another ad peddling worthless desert lots in Rattlesnake Acres? Not exactly: "Can you imagine the excitement of two suns at dawn! . . . The fragrance of mist on emerald mountains; the mystery of multiple eclipses; the celestial grandeur of sapphire skies in a double sunset. . . ." The Emerald City of Oz? No, this idyllic parcel of real estate is said to be located on Alpha Centauri, just 4⅓ light years (25 trillion miles) from earth. This Cognitec Corporation ad promises that the "first interstellar flight will go there soon!" but fails to mention that even if we travel at ten times the average speed of Apollo on its way to the moon it would still take us somewhat over 100,000 years to get there. Nonetheless, "NASA, the Russians and the big corporations, they're all interested. Not only is there some valuable property out there, but the energy levels from the two suns might also increase the intelligence level of mankind." Might also be eaten by dinosaurs there, for all we know. "Fact: In a little known operation called Project Ozma, government physicists have been sending specially coded radio signals to Alpha Centauri to find out whether there is anyone already there. The results have been negative." Fiction! Fact: Project Ozma, which ended in 1960, listened for artificial signals, and transmitted nothing at all. It was conducted in West Virginia, where Alpha Centauri never rises above the horizon. Upon reading the fine print of the ad, one discovers that one is not exactly purchasing celestial real estate on a planet whose existence has never been proven. Instead, one is just registering a "claim" to 100 acres of land with a self-appointed "Alpha Centauri Society"; all one purchases is a "handsome and artistic" mystical Alpha Centauri mobile. What do you suppose motivated the Cognitec Corp. to place this ad in a publication that seeks to promote belief in the "paranormal"? Could they be looking for the greatest concentration of readers of almost boundless credulity?

* * * * *

The "Count" of St. Germain was a celebrated French "parlor psychic" of the 18th century, whose success at bamboozling the rich and the well-connected calls to mind a certain spoon-bender of the present day. Those who have read Charles Mackay's classic 19th century book, *Extraordinary Popular Delusions and the Madness of Crowds*, are familiar with St. Germain's claims of paranormal power, which were widely believed in fashionable Parisian circles during the final decades preceding the collapse of the *ancien régime.* St. Germain was believed by many who should have known better to be able to converse with elemental salamanders and sylphs, to transmutate metals, to call diamonds from the earth and pearls from the sea. But the most astonishing belief about him was that he had discovered the elixir of life and that he was already more than two thousand years old! St. Germain claimed to have been a personal friend of Jesus Christ, and he gave fascinating, supposedly firsthand accounts of the Crusades. Mackay records that St. Germain's magic elixir appears to have melted away, in the manner of all paranormal phenomena, and he died in 1784. Or did he? Ann Shapiro, writing in *Ancient Astronauts* magazine, suggests he may have only *faked* his death, and claims that "many historians [unnamed] insist that he never died!" She hypothesizes that he was in reality an alien visitor *and is still alive on earth today.* In fact, she thinks she has seen him: the Count of St. Germain now goes under the pseudonym of "Jacques Vallee"! This celebrated French-born UFO writer and promoter of belief in "psychic" phenomena, who has a reputation as something of a recluse, is probably an alien on a long-term mission, using his occult powers to help soften for mankind the impact of certain catastrophic events, such as the French Revolution. His current goal is to help usher mankind into an era in which UFOs are accepted and understood. To support the hypothesis, Ms. Shapiro cites "Vallee's personal magnetism, which he seemed to exude like a powerful transmitter." To clinch it, she sketches in an 18th-century powdered wig on Vallee's likeness, and compares it to a portrait of St. Germain. *Quelle resemblance!*

* * * * *

Another example of astrology's penetration into education, if one were needed, is an article in the January 1978 issue of *Teacher*, a widely circulated magazine for elementary-school teachers. The article, "Astrological Grouping Is a Heavenly Concept," by Emily P. Cary, a Short Hills, New Jersey, teacher, seriously puts forth the proposition that teachers should group students for classroom work according to the students' astrological signs. The teacher was

turned onto the idea by a lecture at a meeting of the Jersey Society of Parapsychology, at Drew University, by an astrologer who advises "several United Nations delegations" and "respected and respectable businesses" in the New York-Philadelphia area. "It occurred to me that if such prim and staid organizations as banks rely on astrology for hiring trustworthy and compatible employees, there could be something in it for teachers." The teacher carried out a two-month experiment in astrological grouping with her third-graders and says their schoolwork and their interrelationships improved. "If this idea catches on as quickly as other educational innovations," she concludes, "there may be a fascinating new position in many schools in the near future—the astrological coordinator."

* * * * *

Exciting things are happening at *Official UFO* since publisher Myron Fass took over complete control of the magazine: "Saucers Loot and Burn Chester, Illinois: Story Suppressed by Officials." The townsfolk of Chester are still scratching their heads about that one; none of them seems to recall the incident. "UFO Editor Jeff Goodman Kidnapped to Squelch Information: Men in Black Ransack *Official UFO*'s Secret Files." ("Scientific" UFOlogists are now beginning to take these Men-in-Black stories very seriously.) "I was 80 and a UFO Made Me 18!" "Brain Transplant of Top Government Official Done Aboard Flying Saucer. Note: Why Is Jimmy Carter the Only President to Say Flying Saucers Exist?!" Fass's *Ancient Astronauts* magazine reports "Mummified Water-Breathing Aliens Discovered in Chicago Sewer!!!" Our favorite: "Science Fiction Movies Are Being Directed by UFOs. . . . How Much Truth Is There in Star Wars?" Director George Lucas was supposedly "abducted" aboard a UFO, and "the basic plot may have been dictated to him by space intelligences"; hence, "a large portion of [*Star Wars*] is absolutely true!" The implications are sobering: "Are the media gently preparing the public for a mass UFO invasion? . . . Was the Death Star responsible for the asteroid belt between Mars and Jupiter?" Fass seems to have hit a responsive chord among UFO believers—his magazines are selling like hot cakes.

* * * * *

"The Ideal Christmas Gift for Your Pet": a medallion, of unspecified size and material, displaying a pyramid, and carrying the inscription "May the Powers That Be Protect Me." Why does a doggie need a thing like that? "We all know the terrifying fate that befalls thousands of pets each year who are kidnapped for use in ex-

perimental laboratories. Television news programs have warned us all! "Don't Let Your Beloved Pet Be Next. The medallion may well be the power, the force, that wards off accidents and illness and, yes, even that kidnapping!" Just $5 buys this untapped reservoir of "vast mind power." Multiple choice question: Does the publication in which this ad appears run (*a*) many pro-paranormal articles, (*b*) many anti-paranormal articles, (*c*) a mixture of pro and anti articles, (*d*) little or no articles on the paranormal? Answer: (*a*).

* * * * *

Avant-garde UFOlogist Curt Sutherly has a brilliant explanation of why the two tiny moons of Mars were not discovered until 1877. It's not because telescopes kept improving in quality and size, and the largest refracting telescope in existence, just a few years old, finally spotted the tiny moonlets during the Martian close encounter of that year. Sutherly points out that some writers, such as Kepler and Swift (and Voltaire), had earlier believed that two Martian moons existed. (The reason? Earth had one; Venus none; Jupiter was believed to have only four. If the cosmos were "geometrical," as many thought necessary, Mars had to have two moons. And Pluto sixty-four.) Mr. Sutherly's hypothesis is that "years of belief in the existence of the moons of Mars, beginning with Swift and Kepler" (he hasn't read Voltaire) caused these moons to "orthorotate" into "our reality sphere just before Hall [the discover] went looking for them."

*****

Ontario researcher George R. Harrison has issued an appeal for help. He is on the verge of a dramatic breakthrough in occult research, but he is having problems with "density slicing." A "density slicer" costs, he says, $30,000 or more. What astonishing discovery has he made? "Faces." Human faces, which appear spontaneously, in a mysterious manner. In what medium do they materialize? "Lead pencil and spit." Mr. Harrison explains: "Cover one side of a blank card with pencil lead. Wet your finger in your mouth and smear the lead. Study dried card carefully for faces . . . Note: most people must relax their minds to see faces." He urges that an in-depth study of these "faces" be done, preferably using microcomputers. Perhaps if he were to submit a proposal to the Stanford Research Institute. . . .

* * * * *

The Amityville Horror is a supposedly factual account about a family living in a very, very haunted house, and it's now one of the hottest books on the market. A giant pig with glowing eyes peers in

the windows . . . demons noisily march up and down the staircase . . . and a monster without a face creeps into the children's bedroom! But Curt Suplee, writing in the *Washington Post*, discovers something eerie about the story . . . and it isn't spooks. He smells a hoax. For example, the book claims that the Amityville Historical Society said that the Shinnecock Indians used the site "as an enclosure for the sick, mad, and dying." But in fact, the society says it has never heard such a story before; they emphasize that the Shinnecock tribe never even lived in the area. Suplee also reports that the owner of the supposedly haunted house, George Lutz, was deeply in debt and was having trouble with the IRS. (These problems have now been nicely solved.) The people who are currently living in the house supposedly filled with demons and ghosts report that they have not been receiving any supernatural visitors. They are troubled, however, by other presences: by what one city official termed the "screwballs and nuts who are coming to stand on their lawn."

* * * * *

Even the not-so-conservative UFOlogist Jerome Clark finds *this* story a little difficult to swallow; he calls it the "most bizarre UFO claim of the year." It comes from Pelham, Georgia. On August 6, 1977, when Tom Dawson, 63, went for a morning stroll with his dogs, a UFO reportedly swooped down from the sky and hovered just a few feet in front of him. UFO beings were said to disembark, and to give him a medical examination on the spot. Nothing too unusual so far . . . the kind of stuff that happens almost every day, say the UFO believers. But then suddenly a voice screamed out from inside the UFO: "I am Jimmy Hoffa! I am Jimmy Hoffa! I am . . ." The voice was suddenly silent, as if someone had placed a hand (or a tentacle) over the speaker's mouth. What does Mr. Clark conclude about the incident? "Like tens of thousands of other UFO percipients, a credible person telling an incredible story." ●

SPECIAL REPORT

Tests and Investigations of Three Psychics

James Randi

Part of page 25, pages 26 to 29, and part of page 30 have been purposely deleted from this issue.

Exit Jean-Pierre Girard, "The World's Greatest Psychic"

In *The Humanist* (Sept./Oct. 1977) I outlined tests that had been conducted on Jean-Pierre Girard in Grenoble, France, by members of the Committee for the Scientific Investigation of Claims of the Paranormal in June of 1977. The tests were absolutely negative. With all test objects, under controlled conditions agreed to in advance by all parties, Girard was unable to produce any effects whatsoever over a period of three and a half hours.

Girard, once highly regarded in Europe as a psychic, has met a number of Waterloos recently, and for once the parapsychologists cannot complain that he was treated unfairly. The complaint is repeatedly heard that (a) scientists refuse to examine the claims of the parapsychologists, (b) tests are not done properly, in accordance with established latitude, and (c) enough chances are not given for these elusive powers to be

demonstrated. No longer can these cries be made legitimately, if they ever were valid objections in the first place.

In the February 1978 issue of *La Recherche*, the French scientific magazine, eight authorities give accounts of experiments done with Girard that should prove definitively whether his claims of psi powers are genuine or just more of the hot air that one has grown accustomed to in these matters. The experiments were largely based on the protocols we designed to use in Grenoble with Girard. He was given marked aluminum-alloy bars to bend while watched by a video camera. In all cases he failed to produce any paranormal effects.

Girard has now undergone four carefully designed and conducted tests: with scientists Leprince-Ringuet and Trillat on September 29, 1976; with Randi, Davies, and Evans in June of 1977; with Bernard Dreyfus in September of 1977; and with Yves Farge on January 19, 1978. All of these people, with the exception of myself, are trained scientists, and members of important bodies, such as the French Academy.

So we can state with confidence several facts: (a) Prestigious and qualified scientists *have* examined in detail and at length the claims of psi powers made by a prominent performer. These claims have been supported and endorsed by leading parapsychologists in the past, and they must now explain the inability of these other investigators to see any miracles in the tests. (b) In *all* these tests, the conditions were outlined in advance (as is the case in any legitimate scientific procedure) and agreed to by the participants as being proper, fair, and adequate. Thus there is no basis for claims that these were badly designed tests. (c) Four tests, over a period of more than fifteen months, were conducted with the subject, thus giving adequate opportunity for these miracles to occur. They did not.

There remains, of course, the Catch-22 of the parapsychologists, that "negative" or skeptical persons present can inhibit the results. (I point with sad amusement to the remark of Charles Crussard that *I* have psychic powers, and used them to inhibit Girard's results!) If this is so, then the para-scientists have surrendered their rights to real scientific investigation, since a genuine test requires good observing conditions and proper design in order to be called scientific. Indeed, some investigators have stated that these wonders are not amenable to regular methods of scientific investigation and must be observed under "loose" conditions that allow room for trickery and poor conclusions. If this is so, then I call upon them to abandon their pleas for scientists to look into their bag

of tricks.

We print here a report by Marcel Blanc, a science writer with *La Recherche* who has followed the Girard matter to its conclusion. (A briefer version appeared in *New Scientist*, Feb. 16.) Though the evidence that makes this case is definitive, I am not at all persuaded that supporters of Girard will abandon him. They have far too much invested in him, financially and academically. Several persons have staked their reputations on his authenticity; they cannot retract their support without losing credibility. But this unfortunate circumstance does not affect the overall fact that the public has depended upon these persons as spokesmen for science, and belief in such para-powers has been largely a result of dependence on these "experts." True, it is a huge thing to expect a scientist to reverse himself after committing his career to such a chimera. But such painful obligations are a necessary part of their dedication to science.

With the publication of this account, I personally feel that the Girard matter may be considered closed. But should he wish to be further tested, the CSICP has the obligation, funds and time permitting, to accommodate him. Such is the nature of scientific endeavor, and this committee is totally dedicated to the scientific method, with all that it implies. We await further offers from Jean-Pierre Girard.

Skeptics Look at the Paranormal

by Marcel Blanc

As the new year started, psychokinesis, also known as spoon-bending science, again failed to reach the orbit of orthodox science. On January 19, Jean-Pierre Girard, the French Uri Geller, was unable to produce anything paranormal during a two-hour test in a Paris laboratory, organized by the French television channel TF1.

The experiment was directed by the physicist Yves Farge, Director of Research at the CNRS (Centre National de la Recherche Scientifique). He was assisted by two colleagues—Yves Petroff and Etienne Guyon, as well as by the expert magician Klingsor, President of the International Magicians' Union. The first part of the test consisted of an attempt by J. P. Girard to bend some metallic bars paranormally. He followed the same protocol as the one worked out for his test in Grenoble last June by U.S. magician James Randi, *Nature* editor David Davies, and psychologist Christopher Evans (see the *New Scientist*, July 14, 1977).

During the second part of the test, Girard tried to make small objects move paranormally on a table, and make them levitate. The protocol for

this purpose had been devised by Yves Farge, together with French magician Gérard Majax. In both experiments, J. P. Girard knew exactly what the protocols would be and had agreed beforehand to their use. He nevertheless stated after the tests were over that he had been hampered by their short duration (one hour each). As for Charles Grussard, Research Director of Pechiney and Girard's foremost supporter, he told Yves Farge that as far as his team was concerned, "its members had agreed to work according to not-too-tight protocols," to enable Girard to display his fragile psi-power.

Physical Nature of Psi

The French Uri Geller was tested on two occasions in Grenoble during the

Girard trying to shift compass needles during test conducted by physicist Bernard Dreyfus at the Grenoble Nuclear Study Centre, Sept. 24, 1977. (Photo: P. Moser)

interval between the June 1977 experiment with Randi and the more recent one with Farge in January 1978. A detailed account of both tests appeared in the February issue of *La Recherche.*

The Pechiney team had succeeded in persuading Bernard Dreyfus, Research Director of the Nuclear Study Centre in Grenoble and Chairman of the French Physics Society, to come to see J. P. Girard at work. In reality, however, he was only told at the last minute (on the evening of June 15) that he was expected to act as scientific guarantor for the report to be sent to *Nature* on the experiment he was about to witness. A magician* was also present as an expert, and Dreyfus was told that *Nature* had devised the protocol (it had in fact been worked out a fortnight earlier by Randi, Davies, and Evans). As a result, Bernard Dreyfus became suddenly aware of the official nature of the meeting, which made him extremely cautious. He refused to authenticate the one slight bending of a bar produced that evening because it did not happen until the final agitated minute of a session that lasted from eleven o'clock until half past three in the morning. He therefore wrote to *Nature* that he had seen nothing paranormal that night.

[*Note (by J.R.*): To quote from Dreyfus's own account—". . . a little after 3 o'clock (3:04 exactly) J.P.G. turned to Prost and was speaking with him, eye-to-eye. I noticed—and so noted in my notebook—that his movements were now very much less gentle, very much more energetic. Immediately after, and for the first time that night, the bar suffered a bend of one-tenth of a millimeter. It was slight, considering what Girard usually did, and he asked to continue . . ." The bar soon took another slight bend, accompanied by J.P.G.'s very strong gestures, and the session was ended. Dreyfus's account of this was not published by *Nature* . . .]

On September 24, 1977, Bernard Dreyfus again had J. P. Girard perform tests in his laboratory at the Nuclear Research Centre. Apart from a protocol supervised by two magicians with the aim of forestalling any cheating, the special feature of these experiments was the use of instruments to test the physical nature of Girard's hypothetical psi-power by detecting any changes it might cause in the gravity or electromagnetic fields. Nothing of the kind occurred, except for slight oscillations of compass needles, and these were produced under conditions that, according to Bernard Dreyfus, might have allowed Girard to conceal a magnet on his person. At any rate, he had been proved incapable of bending any bars or changing the structure of metals, as the Pechiney team maintained he could do. Bernard Dreyfus concluded his report as follows: "At the present stage it seems premature, to say the least, to conclude that paranormal phenomena actually exist."

[*Note (by J.R.*): Dreyfus's account specifies that not only did Girard accomplish the movement of the compass needles when most of the experimenters (including both

*Jean-Yves Prost, a magician from Lyons.—J.R.

magicians) were out of the room, and when the experiment had been temporarily suspended, but subsequently one of Dreyfus's colleagues discovered that it was possible to duplicate such movement easily with a small (3mm) magnet concealed beneath a fingernail and indetectable with the instrumentation used in the test.]

It should be said in passing that Bernard Dreyfus also tested 13-year-old Steven North, from Britain, at a session held in Grenoble for TF1 on December 19. North was brought to Grenoble by the British parapsychologist John Hasted. Again, the result of the test was negative.

A New Copernicus

Between June 1977 and January 1978, several parapsychological experiments were conducted by skeptical scientists. This is doubtless the most important event of the past few years in the field of parapsychological research, and shows the desire of parapsychologists for recognition by established science. On the other hand, the reactions of Bernard Dreyfus and Yves Farge are evidence of a new attitude as regards the scientist's responsibility toward society. For it was not merely in order to test parapsychological claims as such, in which they were not particularly interested at the outset, that Farge and Dreyfus agreed to invest time and work in preparing these laboratory experiments. Their real motive, as they both told me, was to counter present criticisms of scientists, who are often accused of being the aloof guardians of orthodox rationalism and deliberately ignoring psi effects, despite the growing craze for the paranormal among the general public.

Charles Crussard, on the contrary, likes comparing himself to a new Copernicus or, as he told me, to Newton. At any rate, he cannot say, after the recent series of experiments, that he has been treated like Galileo or Giordano Bruno.

However that may be, the attempt by Girard and Crussard to put psychokinesis on the same orbit as established science seems about to collapse. The January issue of *Grands Articles du Mois* reported that Girard has given up his lawsuit against Jean-Pascal Huvé for which he was condemned to pay costs. In the thirty-sixth issue of this review, published in December 1975, Huvé had written an article entitled: "*A propos de Jean-Pierre Girard, le nouvel Uri Geller: Psi, escroquerie ou à-peu-près scientifique?*" (About Jean-Pierre Girard, the new Uri Geller: psi, swindle or more-or-less scientific?) Huvé, who had known Girard personally ever since he started spoon-bending at private meetings, wrote in the article: "We can state that all the experiments we witnessed were fraudulent, *on Girard's own admission.*"

In a book on cheating in parapsychology, to be published next spring, Gerard Majax, star magician on French television channel A2, states he made Girard's acquaintance in the course of the magician's opposition to Uri Geller. Majax discloses that, at the time, "Girard was attracted by the

idea of staging a joke which would take in the scientists, and of unmasking the whole thing afterwards, thus proving how far they could be misled."

Girard now admits that he does sometimes cheat to avoid disappointing the public, but insists that he nevertheless has genuine psi power. Crussard remains convinced that Girard has such power. He told me that Randi had it too but refused to acknowledge the fact, and had used it to inhibit Girard's power last June.

Everyone knows that Randi travels a great deal. It is high time for him to admit that he travels on a flying carpet!

The CSICP Conducts a Test of Psychokinesis

Professor John Hasted, of Birkbeck College, London, has criticized the CSICP, and this writer in particular, for improper design of a test conducted June 12, 1977, at the University of Bath, England. This is a report of the conditions, conduct, and conclusions of this test. The reader may judge whether or not the claim of Professor Hasted is correct when he says in a letter to the December 1977 *Journal of the Society for Psychical Research* that the test was done "under rather complicated protocol, which no doubt did not greatly assist the spontaneous phenomenon."

From the beginning, every effort was made to keep the rules for the test as simple and direct as possible. I was in England briefly, having Committee business in France; and in passing through on my way back, I visited Bath in the company of Mr. Michael Hutchinson, who has assisted the CSICP greatly in the U.K., doing research for various projects there. I received a number of calls from Mrs. John Hasted asking me to visit Bath, and I made the time to do so at her request. Hasted himself referred to it as "an urgent matter." I was to witness a test supervised by Harry Collins of the university, who had conducted other, less formal tests with other spoon-benders there. None of the tests had been positive. In fact, the children had been caught cheating, as reported in *New Scientist.*

The subject of this test was to be Judy Knowles, a young woman who Mrs. Hasted had assured me was able to perform on demand, and I was repeatedly assured as well that I would see proof of her powers on this occasion. I in turn told Mrs. Hasted that I would give my personal check for $10,000 to Miss Knowles immediately upon her performance of a genuine paranormal feat, in accordance with my standing offer. But I assured her that the main purpose of my agreeing to test Knowles was

The spoons were easily bendable by this means.

Judy Knowles with test spoon she tried unsuccessfully for almost two hours to bend paranormally.

to obtain proof for the CSICP that she was indeed able to perform as claimed.

In the *JSPR*, John Hasted has faulted Collins's experimental procedure, referring to it as "crude." This is simply not true. Hasted refused to participate, though he witnessed the test, and was therefore unaware that, contrary to what he claims, the spoons were marked secretly to prevent substitution, and the security was very tight. One need only read the protocol designed by Hasted on other occasions to know that ours was quite adequate in contrast to his.

Those participating were: Harry Collins, Bob Draper, Joseph Hanlon, Mrs. Hasted, Farooq Hussain, Michael Hutchinson, Judy Knowles, Mr. Pinch, and James Randi. Everyone agreed to the protocol in writing before the test started. Should any of the observers believe that the protocol had been broken, that person was to announce it immediately, and a decision would be made on what to do. If protocol were broken, the run was to be considered void.

All but Pinch and Miss Knowles were designated "observers." Pinch was the "experimenter" and Miss Knowles the "subject." John Hasted was to deliver the subject to the test room, and sit away from her during the test.

The observers were located in one part of the room, separated from the test area by a "one-way" mirror. A video camera was aimed through the mirror, and registered on a videotape recorder, which we controlled. Miss Knowles sat at a table and a mirror was located to show a back view of her hand. A candle was present to provide "blacking" for the bowl of the spoon being used. A clock was constantly running in view of the camera.

Pinch was instructed to take a spoon from the control area to the test area in a sealed jar, after the spoon had been examined by the observers and approved. He was to remove the spoon in the camera's view, placing it upon the table after marking it with the candle blacking on the inside of the bowl. Miss Knowles was to show her hands clean and the spoon bowl blacking intact, to the camera, after which the start of the test was announced. She was to hold the spoon without allowing her thumb or finger to touch the blacked surface. She was to hold the spoon in one hand only. Identical spoons had been tested and it was found that they could be bent if force was applied to the bowl. A bend *downwards* was to be accomplished, which if done by ordinary physical force, would disturb the blacking.

At the conclusion of a run, the spoon and hands would be shown to the camera, to show blacking intact and hands clean. Pinch would then bend the test spoon on camera, to show it was easily bent. This spoon was then marked, discarded, and not used again. It was to be replaced in the container, and returned to the control area.

A comparison spoon was kept on camera at all times, and properly marked as such. It was used to determine if the test spoon would fit closely against it, and an agreed-upon deviation was established that would be considered a "bend."

Hasted and Miss Knowles were in the test area, with Pinch able to pass back and forth as experimenter, and Hutchinson as well, to protect the interests of the CSICP by observing but not handling the articles.

The protocol was considered broken if (a) the test spoon went out of camera view, (b) both hands of subject touched the spoon at the same time, (c) spoon was touched to table, (d) anyone but Pinch or Miss Knowles touched the spoon during the test, (e) any other body touched the test spoon.

Miss Knowles refused to sign a statement agreeing to the use of her name in a written account of this test.

Conclusions: After two lengthy sessions, the subject abandoned the experiment. Hanlon, Hussain, Hutchinson, and Randi agreed that the subject had on this occasion been unable to perform paranormally. In contrast, the others stated that the results were "inconclusive." This difference in language reflects, I feel, the difference in attitude.

In the *JSPR* article, John Hasted makes two erroneous assumptions to prove that the writer is not a good observer. He puts in my mouth a claim that I am "a better witness than scientists." I have never said that, only that I am a better witness than *some* scientists. In fact, Collins, Draper, Pinch, Hanlon, Hussain, and Hasted *are* scientists; only Hutchinson and Randi are not. The protocol that was used was (a) scientific, (b) adequate to the purpose, (c) simple and direct, and (d) quite properly applied and adhered to. And under this protocol, Miss Judy Knowles, who is able to perform successfully when *not* observed, *produced no results.*

Hanlon and Hussain were asked to serve as *pro tem* members of the CSICP, assisted by Hutchinson. This was a test conducted by the Committee for the Scientific Investigation of Claims of the Paranormal, and was announced as such in advance of the test. The test was negative.

We await another opportunity to test Miss Knowles. ●

Biorhythms: Evaluating a Pseudoscience

William Sims Bainbridge

One of the most interesting current popular fads is a pseudoscience called *biorhythms*. It asserts that the life of every person is shaped by three precise biological rhythms that begin at birth and extend unaltered until death. The biorhythm theory has gained credence with many thousands of people, but is also interesting as a potential research tool for examining the general characteristics of pseudosciences. The theory is unusual in its conceptual clarity. It is not only amenable to empirical test, but also useful for exploring factors that lead people to accept a theory despite the lack of true scientific evidence. This article examines biorhythm theory, uncovers some sources of its persuasiveness, then reports on nine statistical studies that failed to support it.

To inform myself fully about biorhythms, I purchased several books and calculating devices, then enrolled in a biorhythm course taught by Mr. Benjamin Steele (pseudonym) at the experimental college attached to the University of Washington, where I teach. After this course I became a member of the Northwest Biorhythm Association, headed by Mr. Steele. He taught that biorhythms was "our newest science," although "the scientific world just hasn't recognized it yet." He was proud to say, "People into biorhythms are forerunners of a new science and a new age." Steele is also very much involved in astrology, but does not advertise this fact. "I like to keep biorhythms away from astrology, because there's so much skepticism where astrology is concerned." Over the years he has explored several religious denominations, but was never entirely satisfied until he discovered biorhythms: "I can believe that these things are real." Other teachings left him with doubt. "The difference here is, it's observable. I can see

it." So far, Steele has only proved biorhythms in his own life, but says, "At the present time, I am involved with several biorhythm research projects."

"The essence of the biorhythm theory is that from the moment of birth all human beings are programmed by nature to have cyclical ups and downs," Steele explained. "The theory suggests that man's behavior is characterized by three innate cycles. The cycles include a 23-day physical cycle, a 28-day emotional or sensitivity cycle, and a 33-day intellectual cycle. The physical cycle influences tasks of a physical nature: physical strength, endurance, energy, resistance, and confidence. The emotional curve takes on increased importance in situations of high emotional content: sensibility, nerves, feelings, intuition, cheerfulness, moodiness, and creative ability. And the intellectual cycle is of particular importance in pursuits requiring cognitive activity: intelligence, memory, mental alertness, logic, reasoning power, reaction, and ambition."

Each cycle begins at the moment of birth, then oscillates up and down with absolute precision for the entire life. "When our cycles are 'high,' we're most likely to be at our best. When our cycles are 'low,' the opposite is true. But beware of 'critical days'—they occur whenever our cycles are changing. These are unstable days on which we're easily distracted and most prone to accidents." This is the theory. Mr. Steele teaches his students three methods of calculating biorhythms: hand calculation, the use of prepared tables and charts, and the use of the Biolator calculator.

The Biolator is a $30 electronic calculator manufactured by the Casio company. This device is so convenient to use that it makes testing biorhythm theory a very simple job. To perform a calculation, the user simply punches the target data into the Biolator, then the date of birth of the person in question, then presses the BIO button. The Biolator immediately flashes three two-digit "guide numbers" on its display, one for

Table 1
Interpretation of Calculations Using the Biolator

Cycle	Days in Cycle	High Days	Low Days	Critical Days
Physical	23	2-11	13-23	1 & 12
Emotional	28	2-14	16-28	1 & 15
Intellectual	33	2-16	18-33	1 & 17

each of the three rhythms. In operation, it counts the number of days from the person's birth to the target day, separately divides this number by 23, 28, and 33, and displays the remainder from each of these three long divisions. The guide number indicates how far into a new full cycle the target day is. For example, 01-12-24 means that the target day is the first day of a physical cycle, the twelfth day of an emotional cycle, and the twenty-fourth day of an intellectual cycle. Casio provides a little chart that tells the user whether each guide number indicates a high, low, or critical day. In all my calculations for this article, a total of about 2,500, I employed a Biolator and followed Casio's reasonable conventions for rounding off half-days. The only limitation imposed by the Biolator is that all dates must fall between January 1, 1901, and December 31, 1999.

Believing Biorhythms

It is easy to see why Steele himself believes the theory: his self-esteem has been boosted by involvement in biorhythm work. Steele used to play professional football, a grand but uncertain career. Steele's coaches continually found fault with his performance, and he couldn't seem to satisfy them. He happened across a copy of George Thommen's book *Is This Your Day?* This paperback is "the biorhythm Bible," and has sold over 100,000 copies. It explained to Steele that the ups and downs in his performance were not his fault, but caused by unalterable natural rhythms. Then his football career ended. For a while he held an administrative job at our university. When this job also terminated, he found solace in biorhythms. He began teaching the experimental-college course, then launched the Northwest Biorhythm Association. Calling himself a "biorhythm engineer," he claimed professional status, hoping to achieve honor and income in a wonderful new career.

Biorhythm theory is ideal material for a pseudo-profession. The technique of calculation has to be learned, but is relatively simple. There already exists a body of biorhythm literature, containing many subtle variations on the basic theory, permitting the pseudo-professional to acquire a rich fund of specialized "knowledge." Biorhythms are numerologically very efficient. A tiny input of real information (the birth date) produces a high output of pseudo-information (daily biorhythms). The three numbers 23, 28, and 33 have no common factors, so the pattern of cycles does not repeat exactly for $23 \times 28 \times 33 = 21{,}252$ days, a little over 58 years.

Many people seem interested in making money from biorhythms.

Several publishers have brought out books to compete with Thommen's. Mr. Steele earns $7 from each student in his course, and sells personalized biorhythm charts for $4. A "Biotimer" in Delaware charges $5 for an annual chart. A New York service charges $7.95, while Biorhythm Profiles, in Texas, asks $7.50. The co-founder of one of these enterprises admitted: "We have conducted no extensive research ourselves, being occupied with other concerns. My partner was admitted to the bar last year, and I am working toward my Ph.D. in linguistic anthropology at the University of Texas. We founded the business in July 1973 after reading an article on the subject in *Science Digest*, which makes us one of the oldest firms in the country." I interviewed a young computer consultant at our university who has invested around $1000 devising a computer program to generate really nice-looking biorhythm charts, drawn by a four-color automatic plotter, showing the rhythms as three tall, interlacing sine waves. He says he has no opinion about the validity of the theory, but believes he can make a lot of money selling the charts. This fellow first learned about biorhythms in a *Newsweek* article that proclaimed: "Americans are flocking to the new fad. Lester Cherubin, president of Time Pattern Research, Inc., says his company has sold 100,000 biorhythm printouts ($10 to $20 each) in the three years" (Cowley, 1975). The basic computer program for cranking out biorhythm charts was published in *Byte*, a popular computer magazine (Fox and Fox, 1976).

It is obvious why the biorhythm seller wants to sell. Why does the buyer buy? The advertising on the biorhythm books at least expresses the publishers' theories about the appeal of this pseudoscience. One carries the subtitle, "How to Understand and Predict the Cycles in Your Mind and Body That Hold the Key to Success and Happiness." Another urges the prospective buyer: "Take advantage of your body's natural cycles and lead a happier, more successful life." Another pledges to be "quick and easy," permitting an otherwise bewildered reader to "understand and interpret the life cycles that determine how you feel." The blurb on Thommen's book makes a similar pitch: "Tune in to your natural rhythm—and discover a richer, more secure way of living—with the one book you need for *all* the days of your life!"

The typical biorhythm book attempts to prove its case through many examples showing how biorhythms seem to explain events in the lives of famous persons. Aviator Charles Lindbergh died on a critical day in his emotional rhythm. When President Ford pardoned Richard Nixon, he was low in both the emotional and intellectual rhythms. Marilyn Monroe

killed herself near critical days in both of these cycles. Swimmer Mark Spitz won seven Olympic gold medals near physical and emotional highs. I suspect that the authors of these books calculated rhythms for many famous people at important days in their lives and reported only the ones that appeared to support the theory. But these chosen cases also exemplify another favorite tactic of pseudoscientists when they want to appeal to the public: they concern exciting stories about famous people. The average reader, not used to thinking in statistical terms, will be impressed by a collection of vivid, personalistic images.

The books have a nice excuse for failing to prove their claims: they are merely popularizing the findings of other men. Biorhythm theory was supposedly invented and thoroughly tested by three European researchers near the beginning of this century: Wilhelm Fliess, Hermann Swoboda, and Alfred Teltscher. Fliess was a close friend of Sigmund Freud. Indeed, the Japanese manufacturer of the plastic Biomate calculator incorrectly asserts, "The science of Biorhythm, established by Professor Sigmund Freud, a leading psychiatrist of the early 20th century, has been studied by scholars worldwide to become a proven science."

Unfortunately for us, the chief "scientific evidence" cited by Thommen and the other biorhythm authors is entirely unavailable for our inspection. Not a single one of the relevant sources listed in Thommen's bibliography is available in the library of our university. We have Freud's letters to Fliess, but not the replies or anything else Fliess wrote. According to Cohen, "By and large, Fliess' medical and scientific colleagues ignored his book. Some of them even attacked his ideas and the statistics upon which they are based" (Cohen, 1976, p. 20). Whatever the merit of Fliess's work, we cannot inspect it directly. Although Thommen says he corresponded with Swoboda at length, he never saw much of the basic evidence:

> In one of his letters, Dr. Swoboda indicated that eight trunks of research documentation that he had stored in the vaults of the University of Vienna fell into the hands of Russian troops during the occupation of Vienna in 1945. This loss was a bitter blow to Swoboda. (Thommen, 1973, p. 7)

It may have been a bitter blow to Swoboda, but it was a great advantage for the progress of biorhythms. Proponents can cite a wealth of evidence that no one can check. The 33-day intellectual rhythm rests entirely upon the research of Alfred Teltscher, but Thommen himself admits:

> Unfortunately, my own search abroad brought to light no original documentation, scientific paper, or book of his, and so my knowledge of Teltscher's work is based on secondhand reports and on articles that discussed his findings. (Thommen, 1973, p. 18)

The biorhythm books cite not only unavailable studies but also irrelevant publications. Conventional scientists use the term *biorhythms* to refer to any roughly periodic changes in a biological organism. The best known are the *circadian rhythms*, approximately a day in length. In many species these rhythms persist even when the organism is screened from the environmental influences of day and night. Natural daily and annual cycles are imprecise and are set by the rotation and revolution of the earth, not by the organism's moment of birth. These biological rhythms exist, but do not exhibit the characteristics claimed for pseudoscientific biorhythms. Authors of the books tend not to make this clear. Arbie Dale, for example, supports the theory in his book *Biorhythm* with an appendix listing supposedly confirming studies. In fact, not a single one of the thirty-one publications listed that date from after World War II has anything at all to do with the 23-28-33 day.

To get perspective on public acceptance of biorhythms, I conducted a research project with the help of undergraduate students at my university. Pseudoscience is one of the topics included in the introductory Sociology of Deviance course I teach two or three times a year. I always perform experiments with my students, both to show what real science is like and to inoculate them against pseudoscience. At one class, in November 1976, I ran the movie *In Search of Ancient Astronauts*, which spreads Erich von Däniken's quack theory. The next day I lectured for fifteen minutes presenting biorhythm theory as if it were an entirely respectable social-scientific perspective. Then I gave the class a questionnaire. After they had filled it out, I debriefed them, using the evidence presented later in this article to debunk biorhythms. The following day I dealt with von Däniken. The questionnaire allowed me to develop several hypotheses about pseudoscience.

The first question asked was: "Do you tend to agree or disagree with the biorhythm theory just presented in class?" Of course many students may have believed the theory simply because it was presented by an intellectual authority, their professor. But I had previously presented several sociological theories in the same manner and then argued against them, so the students were presumably used to the hypothetical statement of

theories before they were demolished by evidence. Thus I had some reason to be shocked by the result. Only 5.3 percent of the 113 students felt "the theory is almost certainly true," but a huge 61.9 percent said it "is probably true"! Fifteen percent felt "the theory is probably false," while only 3.5 percent were sure it "could not possibly be true," and 14.2 percent had no opinion. That is, 67.2 percent accepted the theory, while only 18.5 percent rejected it, a ratio of nearly four to one!

In another part of the questionnaire, I asked students to judge six theories, biorhythms among them, and indicate on a scale of zero to 100 percent the "chance each theory is true." On the average, biorhythm

Table 2
Students' Acceptance of Six Controversial Theories

Theory	Average "Chance Theory is True" (Expressed as a Percent) All Students	Deeply or Moderately Religious Students	Students Who Are Indifferent or Opposed to Religion
Darwin's theory of evolution	69.8%	62.7%	78.8%
The theory that there is intelligent life on other planets	69.2%	67.1%	71.8%
The theory that "extrasensory perception" (ESP) exists	64.4%	67.1%	61.0%
Biorhythm theory	61.8%	61.7%	61.8%
Von Däniken's theory about ancient astronauts	50.9%	51.0%	50.8%
The theory that miracles actually happened just as the Bible says they did	44.1%	61.1%	22.6%
Number of Students =	113	63	50

theory scored 61.8 percent, only 8 percent behind the score of Darwin's theory. One common hypothesis contends that pseudoscience is really a vestige of traditional religious belief. With this in mind, I asked students how religious they considered themselves: deeply, moderately, largely indifferent to religion, or basically opposed to religion. Religious students were more likely to favor belief in biblical miracles and in ESP and to reject Darwin's theory. It is possible that belief in an immortal soul, or in the possibility of God and his angels speaking to men's minds, makes acceptance of ESP more likely. Religious students were not even the slightest bit more likely to accept von Däniken's theory or biorhythms. This suggests that religiosity is not tied to gullibility, but merely to specific attitudes toward some specific theories.

At the end of the questionnaire I included a page designed to explore the way people respond to their own personal biorhythms. Early in the course, most students gave me their birth dates. Now I told them I had calculated their biorhythms for the day of the questionnaire, and indicated on the last page whether each of the respondent's three rhythms was "high," "low," or "critical." For each one, the student was asked, "On the whole, is this calculation of your rhythm an accurate description of the way you are today?" He was supposed to answer by checking either a "yes" or "no" box.

I actually gave each student only "high" or "low" indications according to the flip of a coin—perfectly meaningless, random "rhythms." However, I believe I convinced almost every student that the rhythms were correctly calculated.

How did students respond to these fake personal biorhythms? Only 5.6 percent of the 108 students checked three "no" boxes, rejecting all three rhythms. Twelve percent checked one "yes" box and two "no" boxes, while 37 percent checked two "yes" boxes and one "no" box. A big 45.4 percent checked all three "yes" boxes! We would expect the student to accept exactly half of these flip-of-the-coin fake rhythms. "High" was supposed to mean "better than average," and "low" was "worse than average." Thus, the average number of "yes" responses should be 1.5 out of the 3.0 maximum possible. In fact the average was 2.24! Students were about as likely to accept "high" fake biorhythms as "low" ones. These results suggest that people do not carry an accurate scale of their personal conditions in their heads. They do not have a well-calibrated "average" against which to compare statements about whether they are currently above or below average. Thus, they are susceptible to

spurious influences when asked to make such judgments (Bachrach and Pattishall, 1960; Schachter and Singer, 1962).

Religious students were not more likely than nonreligious students to accept the fake biorhythms. The sex of the student did not make a significant difference here either. One item in the questionnaire asked, "Were you already familar with biorhythm theory before today?" Only 4.6 percent said they were already "very familiar," but a full 53.8 percent said they were "somewhat familiar." Apparently many students have heard about this pseudoscience, but few, as yet, have become deeply involved in the fad. Those previously familiar and previously unfamiliar were equally likely to accept their fake rhythms.

One variable was highly associated with the tendency to accept the fake personal biorhythm: whether the student had been relatively convinced by the lecture on the theory. Those who gave 0, 1, or 2 "yes" responses to their fake rhythms on the average estimated the "chance" biorhythm theory is true at 56.3 percent, while those who gave three "yes" responses, accepting all three fake rhythms, gave an average response of 66.7 percent. We know that differential acceptance of the theory comes first, causally, because the last page of the questionnaire was sealed by another piece of paper until after all students had completed the rest of the questionnaire. Only after completing all the other questions did a student see his fake rhythms and evaluate them. One can imagine the following vicious cycle. Some people are open to the theory. A book on the theory, written in an appealing and authoritative style, makes them think it is probably true. They calculate their personal rhythms, and are particularly likely to accept them. Thus gullibility may operate in a complex way. A gullible person not only may accept a theory because it is stated authoritatively, but also may misperceive in a way to find "independent evidence" for the theory. Such a person may say, "Sure, I thought it was a pretty good theory to start with. But, look! Now I have tested the theory on my own experience and proved it was true."

Testing Biorhythms

Data suitable for testing biorhythm theory scientifically can be found in almost any large bookstore. Several sports encyclopedias contain not only information about wins and losses but also the birth dates of sports stars. A. James Fix was able to test the theory using data from *Baseball Digest* (Fix, 1976). I used information in *The Encyclopedia of Golf* and *The*

Table 3
Four Biorhythm Sport Studies

Arnold Palmer	Percent of 243 Winning Days on Biorhythm Highs		
Cycle	Expected	Actual	*z* scores and significance
Physical	43.5%	30.0%	4.245 (1/10,000)
Emotional	46.4%	45.7%	0.219 N.S.
Intellectual	45.5%	47.3%	0.563 N.S.
Women Golfers	Percent of 229 Winning Days on Biorhythm Highs		
Cycle	Expected	Actual	*z* scores and significance
Physical	43.5%	51.5%	2.442 (1/69)
Emotional	46.4%	46.3%	0.030 N.S.
Intellectual	45.5%	44.5%	0.304 N.S.
Men Golfers	Percent of 143 Winning Days on Biorhythm Highs		
Cycle	Expected	Actual	*z* scores and significance
Physical	43.5%	46.9%	0.820 N.S.
Emotional	46.4%	41.3%	1.223 N.S.
Intellectual	45.5%	42.0%	0.840 N.S.
Baseball Pitchers	Percent of 95 No-Hit Games on Biorhythm Highs		
Cycle	Expected	Actual	*z* scores and significance
Physical	43.5%	37.9%	1.098 N.S.
Emotional	46.4%	49.5%	0.606 N.S.
Intellectual	45.5%	43.2%	0.451 N.S.

Baseball Encyclopedia. Biorhythm theory holds that athletes are in best form and most likely to win on high days in their three cycles. In four of my studies I calculated athletes' biorhythms for a large number of days on which they won, and inspected the frequencies of highs in all three rhythms.

Biorhythm books by both Thommen and Cohen cite the record of golfer Arnold Palmer as evidence in favor of the theory. Palmer won the British Open at the beginning of July 1962, when he was high in all three rhythms, and lost the PGA two weeks later when he was low in all three. Selected examples cannot prove probabilistic theories, but such theories are susceptible to statistical test. I tabulated biorhythms for all 243 days of the American golf tournaments Palmer won from 1955 through 1971. Only one of the three rhythms, the physical, shows what appears to be a significant departure from the incidence that would be expected by chance. Palmer won far *less* often on physical high days than expected by chance, the opposite of what biorhythm theory predicts! Should we now become supporters of an *anti*-biorhythm theory, the exact opposite of Thommen's? No. The estimate of statistical significance used, the z test, is really not appropriate here. It assumes that each day in our sample is an isolated case, entirely independent of each other day. But golf tournaments cover several days. Palmer won only 59 different tournaments, so the 243 days are not 243 independently selected cases.

Here the error works against biorhythm theory, but sometimes a similar error may inappropriately convince someone the theory is true. A person may feel that a whole series of days exactly fits his rhythms, counting the days as individual pieces of evidence even though they are linked together and there may have been only a couple of actual changes over the period. The Palmer study turned up another artifact. Only one of the 243 winning days came on an emotional "critical day"—0.4 percent versus the expected 7.1 percent of the time. This appears to be statistically highly significant, but the following argument shows that the finding is spurious. Arnold Palmer was born September 10, 1929, a Tuesday. The emotional cycle is 28 days long, exactly four weeks. Therefore, Palmer's emotional critical days always fall on Tuesdays. Golf tournaments are scheduled to cover weekends, and seldom last through Tuesday. Spurious finding indeed! People may find much in the course of their emotional lives that appears to support the theory because the emotional rhythm is synchronized with the cultural rhythm of the week (Melbin, 1960).

I performed a similar study looking at the biorhythms of 31 women

golfers on the last days of 229 tournaments they won. Here the physical rhythm appears to give a little support to the theory. But we really don't know that the 229 winning days were entirely independent cases. Some golfers had winning streaks, and the records of the women varied greatly. To exclude the nonindependence error altogether, I did another study calculating the biorhythms of 143 male golfers for the last day of the first tournament won by each of them. Now none of the figures is significantly different from what would be expected by chance. The last sports performance study looked at 95 no-hit major league baseball games won by 75 different pitchers. Since these games were widely spaced, they do represent 95 independently chosen cases. Here again there is no evidence for biorhythm theory.

Table 4
A Death Study and a Birth Study

Pitchers' Deaths	Percent of 274 Deaths on Low Biorhythm Days		
Cycle	Expected	Actual	*z* scores and significance
Physical	39.1%	38.0%	0.373 N.S.
Emotional	39.3%	39.4%	0.034 N.S.

Pitchers' Deaths	Percent of 274 Deaths Within One Day of the Critical Biorhythm Day		
Cycle	Expected	Actual	*z* scores and significance
Physical	26.1%	25.5%	0.226 N.S.
Emotional	21.4%	21.5%	0.040 N.S.

Mothers Giving Birth	Percent of 565 Births Within One Day of the Critical Biorhythm Day		
Cycle	Expected	Actual	*z* scores and significance
Physical	26.1%	27.6%	0.833 N.S.
Emotional	21.4%	20.4%	0.580 N.S.

Astrologers and other pseudoscientists are rightfully reluctant to predict their clients' deaths. The biorhythm books warn the reader not to use the method for this somber purpose. Nevertheless they claim that death occurs much more often at low or critical days in the emotional and physical cycles and give supportive examples of famous deaths. I calculated the rhythms of 274 major league baseball pitchers for the days of their deaths, and I found nothing. In this study and the next I gave the theory the best chance by including the days either side of the critical day itself, on the possibility that some cases might just miss biorhythm targets.

Biorhythm theory also predicts that mothers are most likely to give birth on critical days in the physical and emotional cycles. For data to test this idea I turned to the birth data published by statistician Michel Gauquelin. Some believers in the occult suspect that only data collected by a fellow believer will have a sufficiently friendly spirit to prove an occult theory. Perhaps all the golf and baseball data are too pedestrian, unsaturated by occult influences. Although this idea makes no sense to a scientist or statistician, I decided it would be only fair to use one body of data that had come from a sympathetic source. I calculated the rhythms of 565 French mothers for the date of birth of their first child, taking all the cases where the mother was born after 1900 from one of Gauquelin's data volumes. I found no evidence in favor of biorhythm theory. The 5.0 percent of the cases that fell right on emotional critical days almost achieves the 0.05 level of significance—in the wrong direction for the theory.

All six of the studies above were based on public data. Anyone can reproduce them. The three concluding studies were based on data collected from students in my large Sociology of Deviance class. Anyone with a similarly big class could replicate them. Because the two preceding studies had ignored the intellectual rhythm, I decided to test it alone.

My first intellectual study analyzed scores my students achieved on two multiple-choice tests held 16 days apart. Because the intellectual cycle is 33 days long, most students were high on the rhythm for one test and low on the other. Therefore I was able to compare each student with himself. A majority had given me their birth dates earlier, without any knowledge of the use to which I would put them. The tests were graded by my teaching assistant, also without knowledge of my study. A total of 105 students took both tests, had given me their birth dates, had a high rhythm for one test and a low one for the other, and scored higher on one test than on the other. The chi-square of the table is 1.28, in the direction opposite to the theory, but not significant anyway.

My biorhythm mentor, Mr. Steele, pointed out to me that his theory might make a more complex prediction than the one just tested. Of course, he said, students should perform best when their intellectual rhythms are high. But they should also *learn* best when the intellectual rhythm is high. Thus they would be expected to do best near the end of the high period, when they have been in top form for several days of studying as well as for the test itself. Similarly, they should do worst near the end of the low period. I calculated the biorhythms of 150 students for the day of the midterm exam. I have divided the students into four groups, according to which quarter of the intellectual cycle each was in. As the table clearly shows, biorhythm theory flunks again.

Table 5
105 Students' Intellectual Biorhythms on Two Tests

		Test on Which the Biorhythm Was High	
		First	Second
Test on Which the Student Scored Higher	First	17	35
	Second	23	30

The last study was suggested to me by Mr. Steele. He said one of his main research projects was intended to test the hypothesis that biorhythms can be used to predict the sex of children. Biorhythm author Robert E. Smith says:

> The biorhythm theory states that when the physical biorhythm is high in the female at the time of conception, the egg cell is more likely to accept the male sperm cell and produce a boy. When the emotional biorhythm is high in the female at the time of conception the egg cell is more likely to accept the female sperm cell and produce a girl. (Smith, 1976, p. 45)

In a book on occult influences in the work of Freud and Jung, Nandor Fodor comments on the sexual aspect of Fliess' biorhythm theory:

> As to Wilhelm Fliess, he was started off on his flight of ideas by his "discovery" of a "nasal reflex neurosis," a new syndrome that he announced in

1897, claiming that dysmenorrhea was of nasal origin and that behind menstruation there was a wider process, a tendency toward periodicity in all vital activities of both sexes. The key to this periodicity was hidden in the numbers 28 and 23. The first number patently stands for the normal period of menstruation. The second may have been derived, so Jones believes, from the interval between the close of one and the onset of another. As Fliess considered all human beings bisexual, 28 was the female component and 23 the male one. These numbers were said to operate in all organic beings, and determined the biological phenomena of growth (including the sex and date of birth of the child), the date of illness, the date of death, going even beyond the human sphere to the realm of astronomy. (Fodor, 1971, 71)

Table 6
150 Students' Intellectual Biorhythms for an Exam

Quarter of the Cycle	Number of Students	Average Grade	Biorhythms Predict	Actual Result
I (high)	36	86.7%		LOWEST
II (high)	40	87.7%	HIGHEST	
III (low)	43	88.2%		
IV (low)	31	88.9%	LOWEST	HIGHEST

Mr. Steele was hoping to demonstrate the utility of biorhythms for predicting sex by collecting information on the births of a number of children. Then he would count back 280 days from the birth to estimate the date of conception, a practice endorsed by Smith, and calculate the mother's physical and emotional rhythms for that day. If one rhythm was high and the other low, the high one would determine the sex of the child. When he first told me about this project, Steele had collected information on only a half-dozen cases. He keeps his data and performs his calculations in an extremely messy fashion, so it was hard for me to follow his procedure, and I was not confident in his methodology. But I offered to provide him with all the data he needed. The students in my large class filled out a new questionnaire, giving information on their own births and on those of people close to them about whom they accurately knew the facts, a total of over 300 births. I excluded all those for which a difficult labor, induced birth, or Caesarean birth was reported. Excluding a few more at random to arrive at a nice round number, I ended up with good information about

the births of 100 males and 100 females. I gave Mr. Steele the 200 birth dates to see how well he could predict sex. Despite all his boasts that he was a biorhythm engineer and researcher, he was not able to complete this simple research, at least not during the three months I was prepared to wait.

I analyzed the birth data myself. In 104 of the 200 cases, biorhythm could not make a prediction because the physical and emotional rhythms were both high, both low, or one was critical. The other 96 were good for confident predictions from biorhythm theory. I compared the predictions with reality. In 48 cases the sex prediction was correct. In 48 cases the sex prediction was not correct. This is exactly the 50 percent we would expect by chance. Steele's imaginative wife had an ingenious explanation for the cases when biorhythms fail to predict the sex of the child: Perhaps these kids grow up to be homosexuals, because their sexual identity is confused!

Conclusions

We have seen several reasons why people might believe in biorhythm theory, but scientific tests give absolutely no empirical support. Those who spread the rumor that the biorhythm theory is correct, whether through books, courses, or private conversation, are acting irresponsibly. The best evidence currently available strongly indicates that this biorhythm theory is without value.

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Plant Primary Perception: The Other Side of the Leaf

John M. Kmetz

In 1968 a 20-page paper appeared in a little-known journal concerning a yet undefined perception phenomenon in plants. The paper was titled "Evidence of a Primary Perception in Plant Life" (Backster, 1968), and although literally thousands of papers dealing with electrical activity in plants have been published since Burdon-Sanderson's report on the electrical activity in leaves of the Venus flytrap (Burdon-Sanderson, 1873), none have received as much public attention as Backster's paper in the *International Journal of Parapsychology.* In that paper, Backster presented evidence, based on the reaction of plants, which has been popularly interpreted as indicating that plants have a consciousness and can react, as people do, to emotionally charged situations. Backster's paper also provided the basis for the best-selling book *The Secret Life of Plants*, by Tompkins and Bird (New York, Harper & Row, 1973).

Because of continued public interest in the Backster experiments, and also because of their possible implications in biological information transfer, it was decided to attempt to repeat Backster's original findings. In that attempt two studies were performed. One study involved the reaction of plants to immersion of brine shrimp in simmering water and was structured after Backster's initial work. The second study involved the response of cells in culture to the feeding of other cells in culture and is analogous to the yogurt-feeding study that Backster reported at the 141st Annual Meeting of the American Association for the Advancement of Science in New York City in January 1975. At that time Backster reported increased electrical activity in one yogurt culture immediately following addition (feeding) of milk to a second culture.

Method and Results

Plant-Brine-Shrimp Study

The plant-brine-shrimp study consisted of two series of experiments. One series used galvanic skin response (GSR) recording methods, as Backster had done, while the second series employed a standard technique for recording potentials from the surface of leaves. Except for the change in recording method, all other aspects of the two series were identical. The following precautions, obtained from both Backster and his 1968 paper, were observed during the plant-brine-shrimp experiments: (*a*) The recording phase of the experiments were automated, and all runs were performed when no individuals were in the laboratory building. (*b*) "Communication" between plants previously used in an experimental run and unused plants was prevented by removing used plants from the laboratory before new plants were brought in. (*c*) Brine shrimp and plants were brought into the laboratory just prior to an experimental run. (*d*) All known biological material was removed from the laboratory during the experimental series. (*e*) Only mating pairs of brine shrimp were used for experimental runs. Backster mentions in his paper only that he used lively brine shrimp. However, he recommended that I use mating pairs, since such pairs would probably be in good physical condition.

The basic scheme for the plant-brine-shrimp experiments consisted of placing six vials containing brine shrimp along with approximately 15 ml of salt water and six control vials with 15 ml of sterile distilled water on the dumping apparatus. The vials were spaced so that a shrimp or control vial dropped into the hot water every five minutes. Typically, three plants were monitored during a GSR run and two plants were monitored during a run involving measurement of potential.

In the case of the GSR runs, electrodes identical to the type used by Backster were employed. These consisted of a pair of 2 cm × 3 cm stainless-steel electrodes placed on either side of a leaf and held in place with a "C" clamp. Between the electrode and the leaf surface was placed a piece of salt-agar impregnated gauze the size of the electrode plate. Additionally, the GSR amplifiers and chart recorder were manufactured by the same company that manufactured equipment used by Backster in his 1968 study. Forty-two plants were used in the GSR series. Using 3 plants at a time with 6 shrimp and 6 control vials per run allowed for data col-

lection on 504 (252 shrimp and 252 control) possible plant responses. The data indicated 14 hits and 238 misses for brine-shrimp drops and 12 hits and 240 misses for sterile-water drops. Analysis of the data using a one-tailed 2 × 2 contingency test resulted in a P value of = 0.70, indicating very strongly that there was no difference in plant responsiveness between dropping brine shrimp or sterile water into a hot-water bath.

When Cleve Backster was told of these results, he claimed I could not get a response because my recorder lacked the mechanical pen positioning device he had on his original equipment. However, my recorder did have an automatic pen repositioning device, and the manufacturer assured me that data collected in the automatic mode were completely valid.

Because of the controversy over the pen repositioning, it was decided to try a second series of experiments using a recording system that allowed for measurement of potential from the leaf surface rather than a change in resistance as recorded in the GSR series. It was felt that this system would give more reliable data because (*a*) potential measurements from plants are well described in the literature (Pickard, 1971, 1972) and (*b*) the pen repositioning and baseline shifting that occurs in GSR recording is absent in the potential recording system. Twenty-one plants were used in this series, allowing for data collection on 252 (126 brine shrimp and 126 control) possible plant reactions. Analysis of the results of the plant potential series using Student's t test yielded a P value of 0.35, again indicating no difference between dumping brine shrimp or sterile water into a hot-water bath.

Cell-Feeding Study

The cell-feeding experiments were designed to be analogous to Backster's yogurt-feeding studies reported at the AAAS meeting. At the time Backster reported increased electrical activity in one yogurt culture immediately following the addition of milk (feeding) to a second culture. The cell-feeding experiments were the direct result of a conversation with Cleve Backster during a visit to his laboratory in October 1973. At that time he was already working on the yogurt experiments, and I suggested that I might try a similar experiment using animal cell cultures, as I thought that cell-culturing would allow better control of variables such as homogeneity of cell line and feeding time. In general the cell-feeding experiments involved feeding fresh culture medium to one cell culture

while recording the electrical activity of a second culture that was not being fed. As in the plant studies, the cell-feeding experiments were designed to operate automatically.

Eighty cell cultures (40 for feeding and 40 for recording) were used in this study. The cell-feeding data were evaluated by measuring the largest peak-to-peak heights, regardless of polarity, of the recorder tracing in the periods before, during, and after feeding. Each measuring period was 45 seconds. Statistical analysis using Student's t test was performed between the feeding and post-feeding periods. The analysis indicated no significant difference between the pre-feeding and feeding periods ($P=0.87$) or between feeding and post-feeding periods ($P=0.81$).

Discussion

The data of the plant-brine-shrimp experiments and the cell-feeding experiments conducted at Science Unlimited lend no support to Backster's hypothesis of the existence of a primary perception mechanism operating at the organismic or cellular level. The data are, however, consistent with reports of others who have also attempted to replicate Backster's findings (Johnson, 1972, and Horowitz, et al., 1975). It is also significant that in both this study and the study of Horowitz, et al., the experiments were performed after consulting with and taking suggestions from Cleve Backster. Nevertheless, negative results were obtained in both cases. Additionally, the experiments reported here represent a much larger data base. Results presented by Backster in 1968 were based on 7 plants with 21 shrimp and 21 control drops; this study employed 63 plants with 378 brine shrimp and 378 control drops.

Additional work with Backster's experimental design have led me to believe that his results, in the case of the plant-brine-shrimp experiments, may represent only random electrical functioning of his electrode system. The GSR electrode system used on the plants consisted of a sandwich composed of two stainless-steel plates to which were applied salt-agar strips. The leaf was placed between the two plates. It can be observed that GSR fluctuations occur in this system even if no leaf is present, indicating that the electrode system is unstable and is most likely the cause of the pen deflections seen on the GSR recorder. Likewise, with the yogurt experiments, the preamplifers used by Backster appear to have a great deal of inherent electronic noise. I am suggesting (by inference) that

he is calling electronic noise a response from the yogurt.

It is unfortunate that the popular press has taken Backster's experiments and presented the results to the public in such a way that many people now believe plants can do something that, in fact, they cannot. The press, for the most part, never mentions that articles on the Backster effect are based on observations of only seven plants. Perhaps they need to be reminded, again, that they are making exaggerated claims from an experiment that no one, including Backster, by his own refusal to do so, has been able to replicate.

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Anthropology Beyond the Fringe

Ancient Inscriptions, Early Man, and Scientific Method

John R. Cole

Anthropologists study countless topics, a disproportionate number of which are alien to the general public and to other scientists. And we also study *ourselves*—belief in UFOs or Bigfoot or Creationism or ESP or witches is grist for the anthropological mill and can itself be studied scientifically. There *is* science in this ecumenicism, however; and however unorthodox our subject matter, most of us distinguish between our discipline and our subject. Without contempt for believers in strange explanations of the world, we fairly often distinguish between the explanations of "insiders" and the empirical evidence we try to explain scientifically. The doctrine of "cultural relativism" is like a scientific ACLU, arguing that everyone has the right to their beliefs without censure from a Western tradition "establishment."

Still, there are weird things afoot to worry even the most cautious anthropologist in the public perception of the things we study. When a folk tradition explains the origin of the world as the result of the actions of a Great Turtle creating heaven and earth, we can respect the tradition without endorsing its scientific reality. But when people invoke the name of science to prove such claims, we need to speak out as scientists skeptical of these claims without disrespect for the people outside the scientific tradition who believe them. We can argue that "sacred cows" are not literally sacred while recognizing the underlying adaptive values of Hindu "cow worship," which is an ideological rationalization of quite reasonable and realistic ecological forces: killing every cow in India might give everyone a hamburger, but it would eliminate that country's source of fuel for fires, traction, fertilizer, construction mortar, milk and cheese, and even methane electrical generators.[1] Traditional Western ideology, then, does not have all the answers to the anthropologists familiar with alternate solutions.

But studying the question of what it means to be human leaves anthropology at the mercy of cranks, crackpots, and the politically inspired cynics—not to mention the perhaps naive sensationalists capitalizing upon irrational, antiscientific cultural currents.

Let us grant that "anything is possible," without rejecting as impossible even the weirdest claims about humanness, while retaining our demand as scientists that revolutionary claims prove themselves rather than be accepted simply because they are asserted.

Major themes of current unverified (to be charitable) anthropological science include several "paranormal" topics: "creationism" of various forms purporting to disprove Darwin; "psychic archaeology" finding sites and interpreting prehistory by séance rather than scientific excavation; acceptance at face value of ESP and magic; resuscitation of hoary Atlantis and Lemuria myths; the "ancient astronauts" syndrome popularized by von Däniken, despite dissections by Ronald Story and others; near-religious belief in pre-Columbian colonization of the Americas by Europeans and Middle Easterners as an explanation of everything noteworthy ever accomplished by Native Americans (and the cyclical "discovery" of American inscriptions and altars that "prove" such pre-Columbian contacts); claims that humans descend from an ancient amphibious female creature, for which there is no known evidence; arguments that contemporary "races" can be ordered hierarchically according to IQ when even the identification of races is an open question among anthropologists and biologists; claims such as Robert Ardrey's that humans are natural killers; and so forth. The list is nearly endless, but the political implications are often rather transparently ominous.

A final category of anthropology potentially awry is the uncritical acceptance of informants' versions of reality without empirical testing. At the 1977 meeting of the American Anthropological Association in Houston, for example, one paper reported on Haitian stories of a coffin traveling the streets under its own power. This paper said the "simplest" explanation of the "evidence" was that either it had happened or there was at least something going on unexplainable by normal science. This paper was the only one I saw reported in the Houston press. I suppose this made better news copy than hundreds of other more orthodox papers read at the meeting, but as "science" it was, to say the least, a bit lacking.

The cultural relativist viewpoint, which refuses to judge *people*, need not rule out scientific evaluations of their *claims* as objective reali-

ty. Like most scientists, anthropologists are simply not trained to judge alleged paranormal phenomena. I have this old-fashioned desire to see controlled experiments and empirical evidence rather than simple testimonials assuring me that rules of scientific evidence are outmoded or are a slavish misapplication of Western concepts to phenomena beyond the ken of brainwashed science-worshipers.

Like other sciences, and perhaps even more than some with longer traditions of "sciencing" rather than speculation, anthropology is vulnerable to exploitation by naive or crank claims and by speculations that ignore the criteria of scientific proof while still claiming the mantle of "science." Margaret Mead, for example, is one of my culture heroes, a pioneering and peerless writer and ethnographer, and a woman who has contributed immeasurably to our understanding of the world around us. But when as president of the American Association for the Advancement of Science she convinced that body to accept as an official affiliate the Parapsychological Association, I believe she gave in to the cultural relativist position of uncritical acceptance of *possibilities* rather than insisting on the scientific discipline that she has championed for half a century. Scientific claims simply cannot be voted upon, even if the voters are thoroughly respectable and sincere.

Not every strange claim in anthropology can be dealt with in a short paper, but I can at least stress that anthropology includes a strong scientific, empirical tradition: at the least, sensational claims do not represent "orthodoxy" in anthropology, for better or worse. However, I will discuss briefly two current themes in anthropology and on its fringes: the current fad for "hyperdiffusionism," which derives Native American cultures from Old World sources; and the perhaps more subtle claims for an extreme antiquity for American peoples (which sometimes go so far as to claim that humans evolved in America rather than Africa).

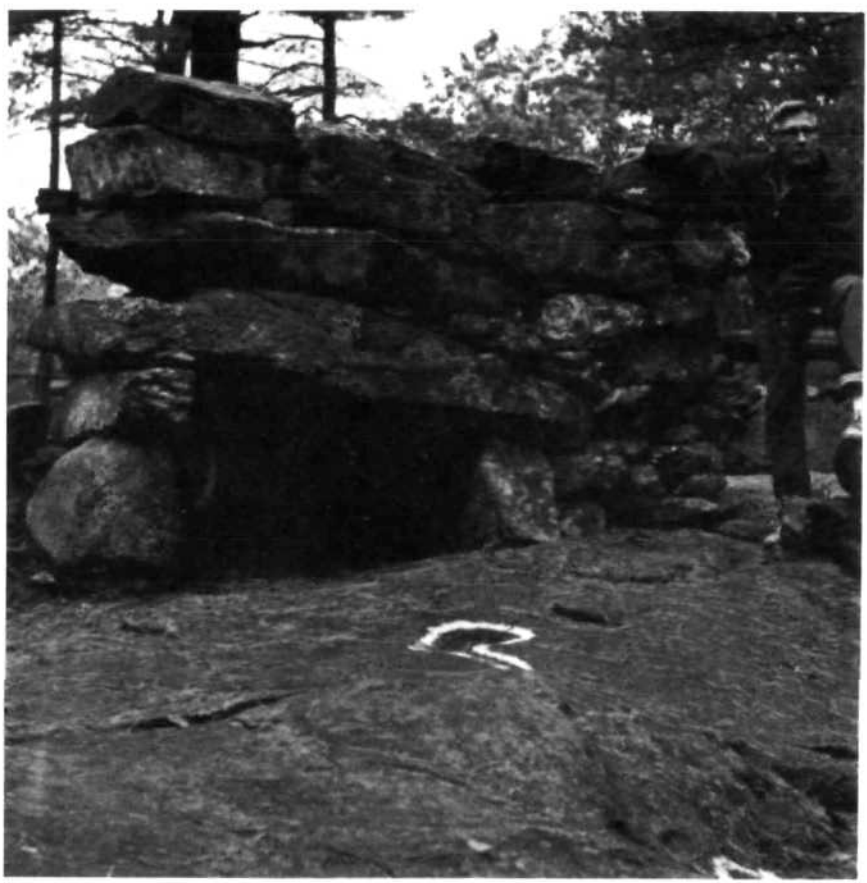
Erich von Däniken's claims of an extraterrestrial origin for human cultural florescence have been disproved devastatingly, but what of diffusionist claims that assert that American cultures did not evolve according to the apparent laws of cultural evolution because they were strongly influenced by European or Asian or African cultures long before Columbus? Without ruling out the possibility, or even probability, of rather small-scale transoceanic diffusion, there is simply no valid empirical evidence of claims for massive pre-Columbian diffusion between the Old and New Worlds, such as those recently revived by Barry Fell in his book *America, B.C.* (New York: Quadrangle, 1977) or Cyrus

Gordon's *Before Columbus* (New York: Crown, 1971). They resuscitate centuries-old claims and arguments repeatedly disproven, to the point that anthropologists no longer bother to argue. "Indians" simply were not too dumb to pile up dirt or stones into mounds and pyramids, despite the prejudices of early European colonialists. Early missionaries tried to prove that Native Americans were descendents of even earlier Old World colonists, sometimes to prove that their charges were worthy of respect rather than annihilation. Today there seems to be a more directly racist tinge to such claims, and in fact claims that Europeans "owned" real estate in the Americas before they were displaced by "savages" has direct political utility in the burgeoning spate of Native American lawsuits challenging European usurpation of tribal lands. Less clear-cut than this perhaps unconscious but significant racism, advocates of "ancient inscriptions" appeal to a romantic idea that a European history for the Americas is somehow more exciting and mysterious than mundane reality based on serious archaeology and physical anthropology.

Fell and his friends have found inscriptions in Celtic, Ogham, Latin, Phoenician, Egyptian, Cretan, Minoan, Greek, Carthaginian, Iberian, Libyan, and many other languages in New England, Ecuador, Canada, Oklahoma, Minnesota, Iowa, and other localities that they claim have been "ignored" by the professionals. At a 1977 "conference" in Castleton, Vermont, celebrating Fell's work, one speaker alluded to "dozens" of major Egyptian cities in Ohio systematically "covered up" by the closed-minded establishment—while offering no evidence beyond the description of some burial mounds! Fell himself said he had evidence (unrevealed) proving that Jesus was known in the Americas "as early as the fourth century A.D." He also cited "evidence" such as Ecuadorian "gold tablets" whose source he could not reveal; when I pointed out that they were from the collection of one Padre Crespi of Cuenca, Ecuador (Erich von Däniken's major source for his *Gold of the Gods* book), discounted as a naive crank by people familiar with his collection (which includes a copper toilet-tank float identified as Inca gold!), Fell refused to answer questions.

He cites the "Iowa Tablets," known where I grew up as the "Davenport Conspiracy" because of actual confessions by the original hoaxers, who used steel tools to carve slate roof slabs traced to a Davenport, Iowa, building. The Minnesota "Kensington Stone" was exposed rather convincingly as a hoax by Erik Wahlgren's book *The Kensington Stone: A Mystery Solved*. "Mystery Hill," New Hampshire, *may* not be fully

understood, but its stone buildings have been traced by professional archaeologists to early historic times with an underlay of Native American artifacts dating much earlier but unrelated to European "Megalithic" cultures such as Stonehenge. Its "sacrifice stone" seems to be identical to grooved stones used throughout New England for two centuries in the production of lye and potash from wood ashes. "Celtic inscriptions" prove to be in modern Celtic, not in the form of the language used thousands of years ago at the time of alleged Celtic colonization. American Ogham inscriptions (an Irish shorthand version of Latin, consisting of patterned hash-marks) seem to be plow scratches on rocks, natural geologic fault-fractures, or outright hoaxes, such as an engraved stone



Structure at "Mystery Hill" in New Hampshire. No need to invoke European "Megalithic" cultures such as Stonehenge. From the forthcoming *Great Mysteries of the Earth* (Oxford Univ. Press) by Charles Cazeau and Stuart Scott.

displayed at the conference with fresh scratches, which, given the type of stone, could not be older than a century or so. Other inscriptions and paintings on pottery are simply Native American pictographs or geometric designs that may resemble some Old World symbols but prove nothing. Something like a "starburst" pattern or asterisk is a worldwide design element depicting the sun or stars, not evidence of diffusion. A mark such as "///" *could* be a tally or just three lines, but certainly is not a definite Roman numeral three! Slashes, triangles, squares, and crosses are so simple to reinvent that their presence is meaningless as proof of diffusion from European languages using similar symbols.

Perhaps buried in all of this hodgepodge of "ancient inscription" claims there *are* some real Old World inscriptions, but the vast majority are either hoaxes or misinterpretations. When Fell and his cohorts accept them all, they discredit possibly *valid* diffusionist arguments, and we should avoid simple guilt by association. Yet every inscription claim that has been investigated by archaeologists, linguists, and geologists seems so far to be spurious. How long must the burden of proof lie with the non-extremists? When Fell "deciphers" an "inscription" such as that on the Canadian "Sherbrooke Stones" in at least three radically different ways in one year—and even accepts the idea that they may be ancient wormholes in sedimentary mudstone!—how can his decipherments be taken seriously in general?[2] How can one argue with a man who identifies frost-pocking of rocks as "cuppules" with religious significance? When oral tradition, historical memory, and archaeological evidence point to the conclusion that New England's "Megalithic shrines" are simply root cellars and other historic constructions, why should we accept the torturously reasoned claim that they are anything else?

Aside from the dubious nature of these alleged inscriptions and shrines, one must ask: Why did ancient voyagers leave behind nothing but inscriptions and religious structures? Where are the habitation sites and tools and pottery one would expect from the many centuries of claimed Old World colonization? (*Not* just contact, but ongoing settlement and trade networks are being claimed.) Native Americans needed horses, sheep, cows, and pigs much more than they needed inscriptions! Significant colonization should yield such domesticated animal bones in pre-Columbian times for the archaeological record, but they do not appear. Artifacts of subsistence and not just ideology should have been left behind, given what we know about the workings of culture. An early Libyan (or whatever) colony would have been in a real position of power

if it could have introduced draft animals and domesticated protein sources, as demonstrated by the Spanish Conquest. And why is there no evidence of Old World diseases before the "official" conquest—or of clear genetic admixture with Native American populations, which would be identifiable from human bone remains? According to what we know about cultural and biological processes, any significant pre-Columbian contact (that is, not just a possible stray boat or very temporary settlement such as the Vikings') would simply have had to leave evidence other than religious artifacts.

The "Early Man in the New World" argument suffers some of the same problems. People clearly were in the Americas about 15,000 years ago and perhaps much earlier; fragmentary evidence much in dispute suggests the *possibility* of human occupation even 50,000 years ago. Even earlier dates are possible, but it is *not* possible that humans evolved in the Americas rather than in the Old World, because there are *no* humanlike or ape fossils in the Americas—only those of very primitive monkeys. No *human* remains such as those of Neanderthals or "Peking Man" types have ever been identified in the New World, while they are plentiful in the Old World. Claims of human antiquity of hundreds of thousands of years in America show up in tabloid news stories but not in scientific journals or museum collections that can be examined by skeptics.

There is a definite popular appeal for "Guinness records," such as earliest, best, biggest, and so on, but American claims for them tend to be reasoned about as well as Bermuda Triangle arguments and documented by claims from people who say "Trust me," rather than, "Here's the evidence and its theoretical explanation." *If* people lived in America during or before the latest Ice Age, what did they do for a living? How did they get here? The claim of an "Atlantic land bridge"[3] has no support from the facts of geology. Sources in Atlantis or Lemuria are, if anything, even more ludicrous.[4] When a supposed scientist says that mammals may have migrated to America as many as a million years ago to prove that humans could have done the same, perhaps he sounds convincingly aware of multidisciplinary data.[5] But some of the oldest mammals known are from the Americas, and such a comment suggests ignorance of the data rather than proof of a good argument (and 60- and 120-million-year-old mammals have nothing to do with humans who have only been around for a few million years at most!).

Anyone claiming extreme antiquity for New World humans must

answer several questions: What is the dating technique? In what controlled context were the artifacts found? Could they be "naturefacts" or natural objects? What were tools used for, and how do they fit into a cultural pattern and evolutionary sequence? What effect would human habitation have had upon other animals and the rest of the environment, and what evidence is there for such effects (slaughtered game, burned clearings, postholes in the ground, gathered plant remains, and so on)? And where did the people come from—and how—if there is no evidence for contemporary human occupation of Siberia, which would have been the only reasonable source for early Americans in the time before boats?

At first glance "early man" claims may not seem as "paranormal" as psychic archaeology or the semireligious inscription mania. But the subject tends to become a single-minded obsession, promoted as an argument of faith rather than scientific method and data. Such statements as, "We're working on a frontier; all we ask is that you accept our subject and evidence" (and then maybe we'll show you our data and methods) are romantic appeals in the tradition of ESP advocates. Another statement often heard is, "Maybe there's more out there than traditionally believed—that's really revolutionary." Well, who could argue with that? But when someone advocating a revolutionary approach says, "The burden of proof lies with our critics," adding that nothing is being *claimed*, but just suggested as a *possibility*, there is a classic paranormal-claim syndrome at work. It *is* tempting to give in to the argument "You won't let us get to first base" until one realizes that such an a priori decision is an unwarranted decision to accept a previously ineligible baserunner! Just as in baseball, a "hit" or walk or error is a prerequisite to getting to first base, and errors do not reflect well upon either side![6]

What is most basic is how unorthodox claimants use scientific method and logic rather than simple claims upon belief. If claims are rejected by most scholars, why is this so? If the only answer is "dogmatism" and accusations of jealousy and persecution of pioneer thinkers, one can at least be a little wary. Denouncing "experts" in praise of noble "amateurs" is not the same as scientific proof. Conservatism *may* be in error regarding new claims, but it serves a real purpose in forcing the burden of proof upon new ideas, making them more rigorous—otherwise we would have to regard every idea that came along, however idiotic, as equal to all others, and science would spend all of its time disproving rather than proving.

Methodology and logic can be evaluated to some extent by nonspe-

cialists if they read carefully enough. Arguments such as those quoted above are giveaways that something may be wrong. Too often we all regard a claim as a valid hypothesis simply because it is in print, but hypotheses, unlike some "claims," are testable and suggest their own tests of verification or falsification. Simply requesting a priori belief in basic premises that contradict established premises is not scientific. While we cannot simply take a vote among experts to decide the "truth," the experts' criticisms need to be taken into account by would-be revolutionaries in their very proposals.

One can endorse cultural relativism without forsaking scientific logic, method, and skepticism. People may be equal, but their contradictory explanations of the empirical world are not. Anthropology deals with sensitive issues of "human nature" vulnerable to political, religious and ideological controversy in a way physics and astronomy no longer are. If humans are called "naturally aggressive," there are clear implications about the inevitability of war and authoritarianism. If civilization can only develop in the Americas as a result of Old World influences, serious racist overtones are at least possible in the argument. Treating culture and its diffusion simply in terms of inscribed symbols implies that ideology and belief are much more important than factors of subsistence and technology—a theoretical position with which I would argue and at least want made explicit.

Anthropology, used or misused, has practical implications that make the treatment of it as simply a collection of "mysteries" or details a mistake, even if it were *not* a science already. But far too often that seems to be its fate in the popular press, tantalized more by exotic things "out there" than by the scientific explanation of them. Explanations are far from complete, but anthropologists simply contribute to further misunderstanding when they sometimes remain aloof from their ultimate clients *and* subject matter, the general public.

Notes

1. See, e.g., M. Harris, *Cows, Pigs, Wars and Witches* (New York: Random House, 1972).

2. T. Lee, "If at First You Don't Succeed . . . ," *Canadian Anthropological Journal*, 15:3, 1977. Translation 1: (*a*) "Expedition that crossed (the sea) in the service of Lord Hiram to conquer territory." (*b*) "Record by Hata who attained this limit on the river, moored his ship and engraved this rock." Translation 2: (*a*) "Thus far our expedition travelled in the service of Lord Hiram, to conquer land." (*b*) "This is the record of Hanta, who attained the great river. And these words cut on stone." Translation 3: (*b*) "An oracle that was concealed within. This the message we broke open."

3. W. McDonald, "How Old IS American Man?" *National Observer*, May 31, 1975, quoting Dr. Bruce Raemsch.

4. Jeffrey Goodman revives this idea based on Edgar Cayce and other seers in *Psychic Archaeology* (New York: G. P. Putnam, 1977) and other forums. For a history of such bad ideas, see R. Wauchope, *Lost Tribes and Sunken Continents* (Chicago: Univ. of Chicago Press, 1962).

5. W. McDonald (op. cit.) quoting Dr. Bruce Raemsch.

6. The quotes and paraphrases (and baseball analogy) are from the transcribed discussion of two papers making claims about a supposed pre-Wisconsin (i.e., 70,000 years ago or earlier) archaeological site in New York. These papers and discussions (along with other, more "orthodox" papers) are printed in J. Cole and L. Godfrey, eds., *Archaeology and Geochronology of the Susquehanna and Schoharie Regions* (Oneonta, N.Y.: Yager Museum, 1977). Among other things, their publication is an indication of the *relative* openness of the "establishment" to unorthodox archaeology's right to be heard—but not to be accepted automatically. ●

NASA, the White House, and UFOs

Philip J. Klass

When any government agency is asked if it would like to expand the scope of its activities, the answer would seem to be a foregone conclusion, according to the well-known Parkinson's Law. Yet last year when the White House asked the National Aeronautics and Space Administration whether it believed that still another government investigation of Unidentified Flying Objects (UFOs) should be conducted, under NASA's auspices, the agency's negative response seemed to deny the findings of Professor C. Northcote Parkinson as well as the strident claims of the UFO buffs. A decade earlier, the U.S. Air Force seemed to fly in the face of Parkinson's Law when it eagerly jumped at the opportunity to get out of the UFO business after twenty years, after a University of Colorado UFO study report confirmed USAF findings that there was no evidence of extraterrestrial visitations or any other extraordinary phenomenon.

Parkinson's Law has not been repealed, nor is it fundamentally invalid. But there is a more basic law of self-preservation that says that no government agency is anxious to take on a new task when it is the political equivalent of walking barefoot through a heavily seeded minefield. And the UFO mine-field was more heavily seeded in 1977 than ever before. One reason is that President Jimmy Carter himself had a UFO-sighting back in 1969 when he was governor of Georgia.

If NASA had agreed to launch a new UFO study, certainly Carter's own sighting would have deserved a high priority on the agency's list of cases to be investigated, since the President could hardly be dismissed as a "UFO kook" or someone whose veracity could be questioned. And if NASA were to do a rigorous investigation, its findings would be embarrassing because the Carter UFO almost certainly would turn out to have been the planet Venus. This was the conclusion of Robert Sheaffer, a

member of the the UFO Subcommittee of the Committee for the Scientific Investigation of Claims of the Paranormal, after his own lengthy investigation and talks with persons who had been with Carter on the night of January 6, 1969. When these witnesses said that the UFO had appeared to them to resemble a bright star, Sheaffer, who studied astronomy, turned to his astronomical records. He discovered that a very bright Venus had been at the same azimuth and elevation angles that night at the time of Carter's sighting (*The Humanist*, July/August 1977).

It ought not embarrass the president to learn this, because Venus and other bright celestial bodies, especially when viewed through layers of haze, probably generate more UFO reports than any other single source. But because of the cloak of infallibility that always envelopes any occupant of the White House, and especially a Naval Academy graduate trained in celestial navigation, a NASA finding that the president's UFO was really Venus could hardly enhance the agency's political standing in White House circles, especially at budget-review times.

It was this Carter UFO-sighting, and an interview given during his presidential campaign to the tabloid *National Enquirer*, that subsequently embroiled NASA in the UFO issue. A long-standing cornerstone of the dogma of UFO buffs is that the U.S. Government "really knows the truth about UFOs" but that administration after administration has conspired to keep this truth under deep security wraps for more than thirty years. (This conveniently ignores the inability of the Nixon Administration to keep the Watergate scandal under wraps and the number of Central Intelligence Agency indiscretions that have emerged under Congressional scrutiny.)

The explanation for this alleged cover-up, according to UFO dogma, is that the "government is afraid that the public might panic" if faced with the prospect of extraterrestrial visitations. In support of this contention, the UFO buffs cite the aftermath of the famous Orson Welles radio dramatization of "The Invasion from Mars," broadcast on Halloween night in 1938. Yet the new Steven Spielberg-produced UFO movie about an extraterrestrial visitation, *Close Encounters of the Third Kind*, is playing to packed houses without producing panic in the theaters.

The *National Enquirer*, which gives a big play in its pages to UFO reports, put a reporter on Carter's campaign trail after learning of Carter's UFO-sighting. When the reporter asked Carter if he would release all of the government's classified UFO information if elected, it got a useful quote which was featured on the front page of its June 8,

1976 edition under the headlines "Jimmy Carter: The Night I Saw a UFO," with the subhead ". . . If elected I'll make all the Govt.'s UFO Information public." The precise quotation, contained in the accompanying article, was: "If I become President, I'll make every piece of information this country has about UFO sightings available to the public, and the scientists. I'm convinced that UFOs exist because I have seen one." Not a surprising response from a candidate who was then crusading for greater candor in government operations.

This Carter statement was widely hailed by the UFO buffs in their publications. At long last, after thirty years of secrecy, if Carter were elected, the public would finally learn the truth about UFOs. The new president had barely learned to find his way around the White House before the avalanche of letters and telegrams began to arrive. One typical letter, from a man in California who claimed he had been "zapped" and injured by a UFO, began as follows (and is reproduced exactly as written):

> DEAR MR. PRESIDENT,
>
> DURING YOUR PRESIDENTIAL CAMPAIGN; YOU HAD MADE THE COMMITTMENT, THAT YOU, SIR, WOULD RELEASE, TO THE AMERICAN PEOPLE, ALL OF THE *U.F.O.* SECRECY NOW HELD IN THE ARCHIVES OF THE FEDERAL GOVERNMENT, CONSISTING OF VARIOUS AGENCIES; YOUR ARTICLE WITH THIS COMMITTMENT APPEARED IN THE *JUNE 8, 1976* ISSUE OF *THE NATIONAL ENQUIRER* NEWSPAPER. I HAVE VOTED FOR YOU, MAINLY FOR THIS REASON. I DO FAITHFULLY HOPE YOU WILL NOT DISAPPOINT ME, AS ONE OF MILLIONS OF CITIZENS WHO HAS VOTED FOR YOU . . .

When Dr. Frank Press, a noted geophysicist, was named the Presidential Science Advisor, his office was assigned the task of responding to the letters from the UFO buffs, many of them charging that the Defense Department, the USAF, and/or the CIA were withholding significant information on UFOs. Acting as the president's agent, Press's office wrote to the Defense Department and to the CIA to inquire about such alleged secrets and was officially informed that there were none. The Pentagon pointed out that all of the USAF's UFO files were now open to the public, in microfilm form, at the National Archives, and interested citizens could even purchase microfilm copies of the entire Air Force files on the subject.

Dr. Press sent a memo to the president reporting the results of his queries but its contents seemingly were not carefully read by some of the

president's top aides. One, believed to be press secretary Jody Powell, in a background briefing with a reporter for *U.S. News & World Report*, dropped a juicy tidbit that prompted the magazine to publish the following item in the "Washington Whispers" column of its April 18, 1977, issue:

> Before the year is out, the Government—perhaps the President—is expected to make what are described at "unsettling disclosures" about UFOs—unidentified flying objects. Such revelations, based on information from the CIA, would be a reversal of official policy that in the past has downgraded UFO incidents.

This was good news to the UFO buffs. Clearly the president had not forgotten his campaign promise! At least one UFO buff, from Ft. Smith, Arkansas, during a trip to Washington, visited Dr. Press's office to volunteer his services to assist in any way in the big event. (My own response was to write a letter-to-the-editor, published in the May 9, 1977 issue of *U.S. News & World Report*, offering 100:1 odds that no such "unsettling disclosures" on UFOs would occur by December 31, 1977. I had expected that such generous odds might induce a number of "takers," but I received no response—not even from a reporter on the magazine!)

Meanwhile, after receiving official denials that the Defense Department or CIA was withholding anything of significance on UFOs, Dr. Press's office was responding to the increased flow of mail from the UFO buffs with a form letter indicating that the government was not withholding vital information on the subject. But this did not prompt the UFO buffs to question their own dogma. Rather it brought vitriolic responses that President Carter, like his many predecessors, was trying to "keep the truth from the public."

In some instances, the White House asked the Defense Department to help it respond to the barrage of letters. But when the man from California, cited earlier, received a form-letter response from the office of the Secretary of the Air Force denying that UFO information was being withheld, the indignant UFO buff responded with a letter that included the following paragraph (unedited):

> YOUR STOCK-LETTER REPLY TO ME IS ONE THE REPITITIOUS [*SIC*] STATEMENTS ABOUT "PROJECT BLUE BOOK," ETC., WHICH I AM TOTALLY FAMILIAR WITH SINCE 1969 . . . WHAT THE HELL HAS ANYTHING YOU SAY, IN

YOUR LETTER, OF MAY 25, 1977, HAVE TO DO WITH A REPLY TO MY LETTER TO: *PRESIDENT CARTER*? NOTHING! . . . A COPY OF THIS LETTER-REPLY IS BEING SENT TO PRESIDENT JIMMY CARTER* ALSO: COPIES OF THIS COMMUNICATION AND YOUR STOCK-LETTER REPLY WILL BE SENT TO MY CONGRESSMAN, VARIOUS CONGRESSMEN AND SENATORS FOR THEIR COMMENTS AND PERUSAL.

Clearly, White House efforts to respond to letters from the UFO buffs were not winning any potential second-term votes for the president. And it would not help matters if such letters were simply ignored and left unanswered. And so, on September 14, 1977, Dr. Press wrote to the NASA administrator, Dr. Robert Frosch, asking his agency to take over the task of responding to letters from the public on the UFO issue. This was not an entirely new assignment, inasmuch as the space agency, understandably, had been the recipient of such queries prior to the new administration. NASA sent out a standard information sheet (76-6), dated July 1976, saying that "NASA is not involved in research concerning unidentified flying objects. Reports of unidentified objects entering U.S. air space are of interest to the U.S. military as a regular part of defense surveillance, but no government agency is conducting an ongoing investigation of UFOs at this time."

This statement flatly contradicted a part of the current UFO-buff dogma—that the U.S. Government had not really gotten out of the UFO business in 1969 when the Air Force closed down its Project Blue Book UFO office. At least some UFO buffs were sure this was simply a ruse and that government UFO investigations still were going on, secretly, in another agency.

The NASA information sheet also quoted the conclusions of a National Academy of Sciences panel, created to review the results of the University of Colorado investigation: "On the basis of present knowledge the least likely explanation of UFOs is the hypothesis of extraterrestrial visitations by intelligent beings." And the NASA statement concluded by providing the names and addresses of two private UFO groups engaged in the investigation of UFOs.

Within a few weeks the word was out that NASA had been asked for its views on whether it should launch a new government-funded UFO study. The timing could not have been worse for NASA, because Columbia Pictures had opened its multi-million-dollar publicity campaign to promote the new Steven Spielberg UFO-thriller, which previewed in New York and Los Angeles during the third week in November. The story published by the *Christian Science Monitor*, November 17, 1977,

reported: "A White House request to the National Aeronautics and Space Administration asks that the space agency consider becoming the government's focal point for a 'national revival' of interest in reports of UFO sightings." The article quoted an unidentified NASA project officer as expressing some reluctance to become involved in a new UFO investigation.

The widespread news-media coverage included an article by Deborah Shapley in the December 16 issue of the respected magazine *Science*, published by the American Association for the Advancement of Science. The article concluded: "Truth is as strange as fiction. The Air Force, officials say, indeed classifies some results of its inquiries made after UFO 'sightings'—many of which are made near military bases, and by men trained to observe the skies, and a few of which are investigated by Air Force men going up in planes. Press's office says that these facts, together with the conflicting responses the government hands out to UFO buffs who write in, keep alive this belief in a cover-up. Policies like these, officials say, need review and perhaps changing."

(When I called Ms. Shapley to ask whether she had checked out the claim that the Air Force "classifies some results of its inquiries made after UFO 'sightings'—many of which are made near military bases . . . ," she told me that she had not, and had accepted the statements given to her by persons in the office of the Presidential Science Advisor. I told her that I believed she had been badly misinformed.)

In late December, NASA's Dr. Frosch wrote the following letter to Dr. Press informing the White House of its conclusions:

> Dear Frank:
>
> In response to your letter of Sept. 14, 1977, regarding NASA's possible role in UFO matters, we are fully prepared at this time to continue responding to public inquiries along the same line as we have in the past. If some new element of hard evidence is brought to our attention in the future, it would be entirely appropriate for some NASA laboratory to analyze and report upon an otherwise unexplained organic or inorganic sample. We stand ready to respond to any *bona fide* physical evidence from credible sources. We intend to leave the door clearly open to such possibility.
>
> We've given considerable thought to the question of what else the United States might and should do in the area of UFO research. There is an absence of tangible or physical evidence for thorough laboratory analysis.

> And because of the absence of such evidence we have not been able to devise a sound scientific procedure for investigating these phenomena. To proceed on a research task without a disciplinary framework and an exploratory technique in mind would be wasteful and probably unproductive.
>
> I do not feel that we should mount a research effort without a better starting point than we have been able to identify thus far. I would therefore propose that NASA take no steps to establish a research activity in this area or to convene a symposium on this subject.
>
> I wish in no way to indicate that NASA has come to any conclusion about these phenomena as such. Institutionally we retain an open mind, a keen sense of scientific curiosity and a willingness to analyze technical problems within our competence.

When those who had a hand in composing the NASA letter reviewed their final product, they probably saw it as the best response under the circumstances. It could not possibly give offense to any of the citizens who had reported seeing a UFO, including the president. Nor did NASA dismiss completely the possibility, however remote, of extraterrestrial visitations.

Instead, Frosch's letter sought to place the burden of proof where it rightfully belongs, on those who promote the extraterrestrial hypothesis, to come up with "tangible or physical evidence for thorough laboratory analysis." Knowing that thirty years of UFO reports had yet to produce a single piece of *credible* physical evidence of extraterrestrial visitations, NASA officials seemed to believe that there was in fact little if any *claimed* physical evidence. In this they were grossly in error. Having made this offer without having a thorough knowledge of UFOlogy, or consulting with those who have, NASA may soon regret it.

During the coming years, I predict, NASA will receive hundreds of pieces of tree branches that allegedly were broken by a UFO and burned grass, charred twigs, and soil samples allegedly taken from spots where UFOs reportedly landed. It will receive soil samples, some carefully prepared by hoaxers, to challenge the skills of the U.S. Department of Agriculture's Research Center, not far from NASA's own Goddard Space Flight Center.

If rigorous laboratory analysis of five hundred such pieces of "tangible evidence" shows nothing extraordinary, perhaps the five-hundred-and-first will, the UFO buffs will insist. If NASA's patience runs thin, the determination of the UFO buffs is far more long-lived. One such piece of physical evidence submitted earlier to the USAF was the broken head of a hunting arrow, allegedly fired by the submitter at robots seen

near a landed UFO!

But still greater pitfalls await NASA, for it soon will discover that it must take far greater security precautions with UFO samples than it needed in handling lunar samples. For the latter, it was only necessary to ensure that none were stolen or diverted. For UFO samples, NASA must protect itself against later charges that the soil sample or tree branch it returned after analysis was not the same one submitted to it. There will be charges of substitution and claims that the original artifact now resides deep in underground security vaults at NASA or some other governmental agency.

This undoubtedly would seem far-fetched and paranoid to NASA officials today, because they probably are unaware that a NASA scientist already has been charged with such "hanky-panky" in a recent book by UFO-buff Ray Stanford. On April 24, 1964, a lone policeman reported that he saw an egg-shaped UFO land, in broad daylight, on the outskirts of the small town of Socorro, New Mexico. When Stanford visited the site shortly afterward as a UFO investigator, he picked up a rock that reportedly contained "metallic scrapings," seemingly left by the UFO as it brushed the rock.

On July 31, 1964, Stanford came to Washington and together with two other UFO buffs, including Richard Hall, then deputy director of a large UFO group with headquarters in Washington, drove to the Goddard Space Flight Center to give the rock to a NASA scientist there who agreed to analyze its "metallic particles" on an unofficial basis. Stanford claims that he asked the NASA scientist to "leave one-half of the particles on the stone's surface, so that I retain half the evidence" and the scientist agreed.

Stanford also alleges that the NASA scientist later told him: "I am virtually certain that the alloy involved here is not manufactured anywhere on Earth . . . I would make a statement to that effect, if you need it." But subsequently, Stanford charges, the scientist denied having made any such statement and said the "scrapings" on the rock were simply silica, a natural constituent. Stanford also charges in his book that when the Socorro rock sample finally was returned to him all particles had been removed, thereby depriving Stanford of any opportunity to have an independent analysis conducted. Stanford also accuses fellow UFO-buff Hall of having joined forces with NASA to suppress the Socorro evidence, an allegation that Hall flatly disavows along with Stanford's claim of hanky-panky by a top NASA scientist. But the Stan-

ford book has gained wide acceptance in UFO circles.

Thus, unless NASA handles every broken tree branch and soil sample as it would the Hope diamond, it can expect that Stanford's earlier, if ill-based, charges of hanky-panky will be raised again to "substantiate" the more recent allegations.

Truth in Advertising, UFO Dept.

Columbia Pictures opened its multimillion-dollar publicity barrage to promote the new Steven Spielberg UFO thriller, *Close Encounters of the Third Kind*, on April 10, 1977, some seven months before the film's preview, with a double-page advertisement in the *New York Times*, the *Washington Post*, and other major newspapers. The copy was sparse but provocative:

Watch the Skies

Over fifteen million Americans, including leaders in science, astronomy, the space program and government have officially reported UFO sightings. Scientists everywhere concede the overwhelming probability of intelligent life somewhere else in the universe.

Hundreds of verified sightings are reported every day from all over the world by reliable observers—and have been for the past thirty years.

This Christmas, millions of people will experience the most beautiful, frightening and significant motion picture adventure of all time.

It will start in an Indiana town and lead to four words which are becoming more and more apparent to all of us everyday: *We are not alone.*

On April 17, I wrote to the director of public affairs for Columbia Pictures mentioning current truth-in-advertising laws and asked for the names of the "leaders in science, astronomy, the space program, and government [who] have officially reported UFO sightings." Also I asked to whom the "hundreds of verified sightings [were] reported every day from all over the world by reliable observers" and who "verified" the reports.

When two months went by without a reply, I wrote on June 12 to the president of Columbia pictures, enclosing a copy of my original letter. I received no reply.

When *Close Encounters* previewed in New York and Los Angeles in late November, the copy in the Columbia advertisements suggested that my letters had, despite the lack of response, reached their intended mark. The copy read simply: "WE ARE NOT ALONE."—*Philip J. Klass*

(At present, Stanford is director of Project Starlight International, which operates a million-dollar UFO research facility near Austin, Texas. The facility includes elaborate flashing lights to attract UFOs, radar and telescopes to spot UFOs, cameras, and a laser that could be used for communication with the UFO. Stanford has never disclosed the source of the funds for what certainly is the best-instrumented UFO facility in the United States, if not in the entire world.)

Although NASA's decision not to initiate a new UFO investigation will be criticized by many UFO buffs, they can take solace in Frosch's reference, on two occasions, to "these phenomena." Seemingly this implies NASA recognition that UFOs exist as a phenomenon. In reality, the only thing known to exist with absolute certainty are UFO *reports*, suggesting that Frosch might better have used the term "these reported phenomena." For, as President Carter has demonstrated, a "reported UFO" can turn out to be a well-known phenomenon that was identified, and better named, long ago. ●

A Second Einstein ESP Letter

Martin Gardner

The previous issue of this magazine (Fall/Winter 1977) published my note on Einstein's attitude toward the brief introduction he wrote for Upton Sinclair's book *Mental Radio.* The note included a letter that Einstein had written to the psychoanalyst and parapsychologist Dr. Jan Ehrenwald.

Dr. Ehrenwald has kindly allowed me to have a copy of a second letter he received from Einstein, which contains further comments on parapsychology. I have obtained permission from the Einstein Estate to publish the following translation:

8 July 1946

Dear Mr. Ehrenwald:

I have read your book with great interest. It doubtlessly represents a good way of placing your topic in a contemporary context, and I have no doubt that it will reach a wide circle of readers. I can judge it merely as a layman, and cannot say that I have arrived at either an affirmative or negative conclusion. It seems to me, at any rate, that we have no right, from a physical standpoint, to deny a priori the possibility of telepathy. For that sort of denial the foundations of our science are too unsure and too incomplete.

My impressions concerning the quantitative approach to experiments with cards, and so on, is the following. On the one hand, I have no objection to the method's reliability. But I find it suspicious that "clairvoyance" [tests] yield the same probabilities as "telepathy," and that the distance of the subject from the cards or from the "sender" has no influence on the result. This is, a priori, improbable to the highest degree, consequently the result is doubtful.

Most interesting, and actually of greater interest to me, are the experiments with the mentally retarded nine-year-old girl and the tests by Gilbert Murray. The drawing results seem to me to have more weight than

the large scale statistical experiments where the discovery of a small methodological error may upset everything.

I find important your observations that a patient's productivity in psychoanalytic treatment is clearly influenced by the analyst's "school." This portion of your book alone is worth careful attention. I cannot fail to note that some of the experiences you mention arouse the reader's suspicion that unconscious influences along sensory channels, rather than telepathic influences, may be at work.

At any rate, your book has been very stimulating for me, and it has somewhat "softened" my originally quite negative attitude toward the whole of this complex of questions. One should not walk through the world wearing blinders.

I cannot write an introduction, as I am quite incompetent to do so. It should be provided by an experienced psychologist. You may show this letter privately to others.

Respectfully yours,
(signed) A. Einstein.

The book, which Dr. Ehrenwald had sent to Einstein in the form of page proofs and for which Einstein declined to write an introduction, was *Telepathy and Medical Psychology.* It was published in England by Allen and Unwin in 1947 and in the United States the next year by W. W. Norton. The introduction was written by Gardner Murphy. (Dr. Ehrenwald's latest book, *The ESP Experience*, was published earlier this year by Basic Books.)

Let me add that I find Einstein's remarks entirely admirable. He is less dogmatic in his negative attitude toward parapsychology than he had been when he wrote his previous letter. He believes one should keep an open mind, but he is still strongly put off by the reported evidence that ESP does not decline with distance. With great tact and politeness he informs Dr. Ehrenwald that unconscious but quite normal sensory channels, rather that ESP, may be causing the effects that Dr. Ehrenwald attributes in his book to telepathic contact between analyst and patient. Finally, with characteristic humility, he points out that the entire field is one in which he has no competence.

I wish to thank Martin Ebon for providing a translation of Einstein's letter. It has been approved and slightly edited by Dr. Ehrenwald. ●

Book Reviews

Scientists Confront Velikovsky. Papers from an AAAS Symposium, San Francisco, February 25, 1974. Donald Goldsmith, Editor. Cornell University Press, Ithaca, N.Y. 1977. 183 pp., illustrated, $8.95.

Reviewed by George O. Abell

The thirty-ninth edition of *Who's Who in America* lists Immanuel Velikovsky as "author, scientist." According to the *World Almanac of the Strange*, "It will probably take years before a definitive verdict is passed on Velikovsky's theories."

Who is Velikovsky, the author-scientist? And what are those theories that have raised such controversy for nearly thirty years? Velikovsky was born in Russia in 1895 and received the degree of Doctor of Medicine in Moscow in 1921. He later studied psychoanalysis in Zurich and he practiced medicine and psychiatry from 1929 to 1934. By the 1940s he had become interested in what he regarded to be interesting correspondences between myths of various early peoples and biblical stories. He invented an astronomical theory with which he hoped to account for these many ancient legends in terms of catastrophic encounters between the earth and other celestial bodies. His main theory was first publicly announced in his book *Worlds in Collision*, originally published by Macmillan and Company in April 1950 but transferred to Doubleday in June 1950.

Briefly, Velikovsky's astronomical hypothesis is that a comet was ejected from the planet Jupiter about the middle of the second millennium B.C. Over the next several hundred years, the comet passed twice near the earth, causing great upheaval, and at various times rained insects and manna upon the earth. The comet also passed near Mars, diverting that planet from its orbit, so that Mars also passed near the earth, causing additional tidal disruptions. Eventually, about the seventh century B.C., the comet transformed itself into the planet Venus, which has occupied its present orbit ever since.

The astonishing thing to me is why Velikovsky's theory was ever controversial in the first place; it has certainly never been controversial among scientists. Indeed, anyone with even modest training in astronomy or physics would recognize the theory as patently absurd. It is not absurd simply because it is an unproven scientific hypothesis; in fact it is not a physical theory at all. It ignores what is known about the most basic laws of mechanics (such as the conservation

of momentum, energy, and mass); it ignores gravitational theory; it violates the most fundamental principles of electricity and magnetism and thermodynamics; it even ignores the very nature of planets and comets. Yet Velikovsky describes his theory as though he were invoking these very physical principles (although in the preface he implies that his ideas may be incompatible with Newtonian theory). Most of us receive, from time to time, letters and tracts from people with highly imaginative "scientific" hypotheses, but which are clearly incompatible with what we know about physical law. Indeed, I have a very sizable "crank file" filled with such documents; yet many of these documents are no more outlandish than Velikovsky's theory.

Why, then, is Velikovsky more notable than the myriads of other cranks? Why should there be any controversy at all over ideas that are agreed to be utter nonsense by virtually all physical scientists? Evidently, it is because Velikovsky managed to have his ideas brought before the public by a major publisher. His first book, *Worlds in Collision,* received highly favorable reviews by such respected journals as *Harper's* magazine. In fact more than 50,000 copies of the book were sold in the three months before its publication was turned over to Doubleday. It is true that *Worlds in Collision* (like Velikovsky's later works) does not read like a crank book; on the contrary, it appears to be a very scholarly work, convincingly presented and well annotated with footnotes. In fact, when I read *Worlds in Collision* it appeared to me that although Velikovsky's astronomy was complete garbage he had really done his homework on archaeology, which of course is heavily involved in his treatment of various myths and biblical stories. I recall once having lunch with an archaeologist on our campus, and expressing my admiration for Velikovsky's archaeological treatment. To my surprise my companion, in considerable shock, announced that he felt Velikovsky was quite well versed in astronomy but that his archaeology was complete bunk. My friend informed me that Velikovsky had badly garbled archaeological data, and had even misplaced events by many centuries in time. I suppose it serves as an object lesson on how even the best educated of us can easily be led astray in fields far from our own areas of competence.

In any event, *Worlds in Collision* became a best seller, and was followed by *Ages in Chaos* (Doubleday, 1952), *Earth in Upheaval* (Doubleday, 1955), and *Oedipus and Akhnaton* (Doubleday, 1960). The 1970s have seen a new surge of interest in Velikovsky; in fact, between 1972 and 1974 the Student Academic Freedom Forum published the slick, quality magazine *Pensée,* devoted exclusively to the theories of Velikovsky and alleged proofs of his theories.

Despite his considerable success among the general public, Velikovsky and his followers could rightly claim that he was not only rejected but ignored by the scientific establishment at large. To answer the growing popular criticism of scientists for their attitudes toward Velikovsky, an eminent group led by Professor Carl Sagan urged the American Association for the Advancement of Science to sponsor a special symposium on the theories of Velikovsky, where he and his supporters could meet face to face with members of the scientific community. The symposium was held at the San Francisco meeting of the AAAS on February 25, 1974. The book *Scientists Confront Velikovsky,* edited by Donald Goldsmith

(one of the conference organizers), consists of papers presented at that conference.

In his introduction to the volume, Goldsmith describes the events leading to the conference and the proceedings themselves. Velikovsky was present and presented a contribution. The only person of scientific training that the organizing committee could find who would support Velikovsky's views was Dr. Irving Michelson, of the Illinois Institute of Technology. (Michelson, according to Goldsmith, claims not to agree with all of Velikovsky's theories but is basically sympathetic.) Unfortunately, both Velikovsky and Michelson declined to submit written versions of their contributions for inclusion in the present volume. There is, in fact, an added invited chapter by David Morrison, Assistant Deputy of the Lunar and Planetary Programs at NASA, and an excellent foreword by Isaac Asimov.

The first formal chapter of the book is by sociologist Norman Storer, treating the subject of the sociological content of the Velikovsky controversy. Storer describes the anti-intellectual atmosphere of the early 1950s (during the height of the McCarthy era) and interprets the scientific community's reaction to Velikovsky as that of an institution feeling itself under attack. He describes the public acceptance of Velikovsky partly as a symptom of a general suspicion of scientists and intellectuals, and partly as a champion of the underdog; Storer suggests that the public's view of Velikovsky is that of a " 'Mr. Smith goes to Washington,' who brings the virtues of unadorned honesty and a simple concern for the truth into the midst of a self-preserving club of arrogant, powerful politicians." He also compares Velikovsky to the "loud, disputatious new kid in the neighborhood who jumps into the middle of an on-going ball game and thoroughly disrupts it for the players."

Here I think Storer misses the point, or at least misses a major sociological phenomenon associated with Velikovsky. I don't believe the scientific community felt itself the least bit threatened by Velikovskyism; by no stretch of the imagination could Velikovsky's ideas pose any challenge to scientific theory. To the scientist the ideas of Velikovsky are as asinine as the notion that an elephant could hatch from an acorn would be to the general public. Rather, I think the scientific reaction was one of frustration—frustration that Velikovsky was ever taken seriously, let alone believed, by the general public. Most scientists, especially astronomers, have long been concerned with public education; indeed, many scientists are also teachers, and a large fraction even give courses for nonscience students to acquaint them with scientific principles. I think the scientific reaction was largely one of bewilderment: "Where have we failed?"

When the average person's television goes on the blink, he calls a TV repairman, not a plumber. When his automobile doesn't start, he goes to an auto mechanic, hardly a shoe repairman. When he feels his appendix is inflamed he goes to a physician, not a baker. When his house is infested with termites, he calls a pest eradicator, not a jeweler. Yet when it comes to the judgment of a new physical theory, that same person apparently prefers to believe a psychiatrist—one who professes himself ignorant of physical science—rather than the entire community of physical scientists who have devoted their lives to their subject.

Ironically those same people who rally to the support of Velikovsky, and reject the extraordinarily well-documented principles of conventional science, depend on that same science every day of their lives. The television sets they watch, the automobiles they drive to work, and the airplanes that fly them from place to place in the nation, all depend on the working of fundamental principles of science that one would have to reject if Velikovsky's hypothesis were to be correct. Fred Hoyle summed it up nicely by once remarking that if he were aboard a rocket ship going to Jupiter he would certainly hope that the trajectory of the vehicle was calculated according to Newtonian laws and not Velikovsky's.

Of course scientists do make mistakes. Of course there is always debate at the frontier of knowledge. Even unexpected ideas (such as continental drift and meteorites falling from the sky) sometimes turn out to be right. But new advances in science do not negate well-established laws and principles in the regimes in which they are known to apply. Rather they extend our understanding of the physical universe to new realms. The twentieth-century quantum theory and theory of relativity did not make Newtonian mechanics wrong; Newtonian gravitational theory has been extraordinarily successful in landing men on the moon and space probes on Mars, and in sending vehicles to other planets of the solar system. Rather, the quantum theory extended our understanding to the realm of the atom, and relativity extended our understanding of the behavior of objects to those with speeds near that of light, or in the vicinity of extraordinarily intense gravitational fields. Isaac Asimov summed up this matter extremely well in his foreword, where he described the role of the heretic: occasionally the heretic in science turns out to be correct, but almost without exception it is a heretic that comes from within science, and even then only rarely is the heretic right (Asimov estimates one time in fifty). Indeed, we have our heretics in astronomy. Not infrequently the *Astrophysical Journal* contains papers that the majority of astronomers regard as exceedingly unlikely, or even a bit nutty. But if a paper is not demonstrably wrong, it can generally be published, and at least is open for consideration.

I realize that it is often, if not usually, difficult for the lay reader to distinguish science from fake science. As the frontier of science is pushed ever forward, it becomes ever more technical and the jargon so specialized that often scientists in closely related fields cannot read each other's technical papers. On the other hand when a scientist goes from one field to another one he generally seeks the advice of an expert in that field, or at least avails himself of review papers written by such experts. He certainly does not rely on a self-proclaimed genius who claims support only from an uninformed public. Although the followers of Velikovsky may think that they have found their Mr. Smith in Washington, they are actually following somebody who may be a bit crazy. For isn't there something psychotic about a person who claims that he alone, in a field with which he is unfamiliar, can fathom the pure truth, while hundreds of thousands of specialists with lifetimes of experience behind them are muddling about in darkness? And doesn't the popular acceptance of such a scientific-religious hero suggest a problem, or at least some kind of an unfilled need, on the part of the follower?

I do not think the reaction of the scientific community was like that toward

the new kid from another neighborhood who jumps into the middle of an ongoing ball game. A better analogy would be if the new kid jumped into a baseball game, but insisted on going to bat with a *jai alai cesta,* and proclaimed that he had made a home run when in fact he had struck out, and then the referees and fans all agreed with him! Here, I think, is a more significant sociological observation concerned with the Velikovsky phenomenon!

The heart of *Scientists Confront Velikovsky* is the excellent chapter by Carl Sagan. To be sure Sagan's is not a complete analysis of all phases of Velikovsky's writings. He refers only briefly to the concordances in myth and legend, and certainly space does not permit a detailed analysis of every aspect of Velikovsky's theory. However, Sagan does address in detail ten particular problems with the Velikovsky model, such as the ejection of Venus by Jupiter, the stopping of the earth's rotation and the subsequent restarting of it with almost exactly the same period, the chemistry and biology of the terrestrial planets, the clouds of Venus, and the circularization of the orbit of Venus and nongravitational forces in the solar system. Sagan's account is brilliant, and although at times witty, he nevertheless takes Velikovsky seriously, and writes in a scholarly and persuasive manner on each of the problems he attacks. Needless to say, Sagan's analysis is devastating to the Velikovskian theory.

Were it not for the singular history of the Velikovsky affair, I might have found Sagan's analysis rather like nit picking. It would have been as though he were attacking the theory that the earth is flat and is supported on the backs of four elephants (I have read that such a view actually was held by at least one ancient civilization) by analyzing the weight distribution of various portions of the earth on each elephant, and considering the structural integrity of the skeletons of the elephants, to see whether they could, in fact, support the required weight. Without background knowledge, one might have been inclined to say it is absurd because the earth is known to be round, and besides, why should there be elephants anyway, what are they standing on, and what do they eat? But if a large fraction of the population takes seriously the view that the earth is supported by elephants, then one must attack the theory on its own grounds. Similarly, Sagan attacks Velikovsky on his own grounds.

Sagan also considers the so-called proofs of the Velikovsky model, such as the claim that the high surface temperature of Venus proves it must be young, or that radio radiation from Jupiter shows that it must indeed have ejected Venus in the recent past. Sagan clearly demonstrates how these proofs are either wrong, actually refute the Velikovsky hypothesis, or are irrelevant. (After all, it is realized that the breathing of the elephants should shake the earth; there are known to be earthquakes, therefore the elephant hypothesis must be correct.)

Sagan's contribution is followed by a chapter by J. Derrall Mulholland, a well-known expert in celestial mechanics in the Department of Astronomy, University of Texas. I found Mulholland's chapter not quite as strong as the others in the book and a slight disappointment, considering what I would have expected from a man of his expertise and qualifications. I felt that many of Mulholland's statements were given without supporting justification. (For example, what do clocks have to do with the determination of latitude?) I also felt that he

was a little careless in a few points: surely he could not have meant to say that the number of days per year could have varied by as much as one or two per cent during recorded history, and surely he could not have meant to refer to the Oort comet as a "belt" of comets. Still, Mulholland gives a nice review of celestial mechanical consequences of the Velikovsky model which clearly violate observations.

An excellent account of cuneiform evidence for early observations of the planet Venus is given by Peter J. Huber, professor of mathematical statistics, Eidgenössische Technische Hochschule, Zürich. Huber's chapter is a very scholarly and carefully prepared paper that clearly lays out the evidence, in the form of cuneiform records, that Venus had been observed far earlier than the time Velikovsky claims it was formed. There are certainly records of observations going back to at least 1900 B.C., and very probably of observations that date back to nearly 3000 B.C. Huber also presents overwhelming evidence that Venus was extraordinarily well observed, and that moreover its orbit must have been essentially the same as it is today, during the period around 1500 B.C. at least seven or eight centuries before it had been formed according to the Velikovsky hypothesis. Huber's arguments alone are sufficient to completely rule out the Velikovsky view.

A final chapter by David Morrison reviews the evidence relevant to Velikovsky's hypothesis that comes from planetary astronomy. He points out clearly that the surfaces of the planets must be old, that the hot surface of Venus cannot have resulted from a recent origin, that the chemical compositions of the atmospheres of Jupiter and Venus are completely incompatible with a Jovian origin for Venus, and that the very nature of the surfaces of the terrestrial planets is completely incompatible with recent (last few millennia) violent encounters between them.

There is a substantial overlap between Morrison's and Sagan's chapters; in fact Morrison's only illustration is a repeat from one presented by Sagan. On the other hand, Morrison's chapter is relatively brief, very clearly written, and is an excellent summary and review; I think, therefore, it is a valuable addition to the book for the lay reader.

It is regrettable that the contributions from Velikovsky himself and from Michelson are not included. However, an article adapted from Velikovsky's address at the AAAS symposium is now available in the November/December 1977 issue of *The Humanist* magazine, along with an abbreviated version of Sagan's chapter in *Scientists Confront Velikovsky*, and also an additional paper, titled *Afterword —1977*, by Velikovsky. The reader will find these additional contributions by Velikovsky interesting, but hardly revealing.

One would like to say that *Scientists Confront Velikovsky* has finally buried this novel notion of the origin of part of our solar system. I'm afraid that it has not. Those who can follow the book's rationality never took Velikovsky seriously in the first place (although the arguments presented therein will prove useful in debates with believers). On the other hand, those who follow Velikovsky do so not out of reason but out of emotion, as a belief in a sort of neo-religion, and perhaps as a way of rebelling against the authority of science, mistakenly thinking that scientific laws can be changed or overthrown as can those of society, by will

or revolution. But for all the Velikovskian protest, Newton's laws will prevail. (As Galileo is apocryphally said to have remarked, "The earth still turns.")

At the time of antiquity, or perhaps even through the dark ages, Velikovsky's hypothesis may have been a viable one. Little was then known about the true natures of the other worlds, nor of the physical laws that govern their behavior. But we've come a long way since then, as our modern technology attests. Velikovsky's ideas concern well-trodden ground with which we are very thoroughly familiar, and are simply incompatible with long-understood and extraordinarily well-documented principles.

Yet I suspect that the new religion of scientific superstition will continue. Our hope is that it will not prevail among the majority of our citizenry. We need the rationality of science to survive the crises of overpopulation, pollution, depleting energy sources, crime, and man's inhumanity to man, brought about by those very people who reject reason, and turn instead to the murky occult, with its superstition, blind acceptance, and prejudice. As Voltaire said, "Men will cease to commit atrocities only when they cease to believe absurdities." ●

Future Science: Life Energies and the Physics of Paranormal Phenomena. Edited by John White and Stanley Krippner. Anchor Books, New York, 1977. Paper, $4.50.

Reviewed by Paul Kurtz

Future Science contains forty-two articles by individuals actively involved on the "frontiers" of research into the paranormal. Throughout the book appear such terms as "breakthrough," "the latest findings," "new," and "revolutionary." It is compiled by two well-known prolific authors in the area of parapsychology and psychic research: John White, an editor of *New Realities*, and Stanley Krippner, a former director of the Dream Laboratory at Maimonides and past president of the Association for Humanistic Psychology.

In their Introduction the editors claim that "the expanding perimeter of human knowledge has brought pioneering scientists . . . face to face with events that cannot be easily explained in terms of present scientific concepts of reality" (p. 13). These include the whole gamut of paranormal "phenomena," everything from psychic abilities, to UFOs, strange energies, firewalking, acupuncture, pyramid power, dowsing, Kirlian photography, and so forth. White and Krippner complain that in reporting their observations the all-too-frequent reaction by other scientists is either to disregard their findings or to label them as "pseudoscience." The major part of the scientific world is not interested in examining the evidence, they say. There is a psychological urge to "disallow' the unfamiliar. Such a dogmatic attitude they label as "scientism" (improperly, I think). According to the editors, the scientific critic attempts to explain away paranormal events as due to poor observation or experiments, delusion, deception, or falsification of

the data, or, barring that, they are simply ignored or labeled "anomalous." White and Krippner assert that what is often discovered in the history of science is that what is labeled "lunatic fringe" proves to be the "leading edge." Hence, the reason for this book and its title, *Future Science*, for that is what the editors and contributors claim that they are engaged in. "Many so-called paranormal events," they insist, "are not beyond science . . . only beyond presently accepted models of science" (p. 15).

The same complaint that their critics are unfair is echoed in other papers in this volume. For example, Zdenek Rejdak, remonstrates against an attitude that he labels as "negativism a priori." This is an attitude that rejects paranormal possibilities antecedent to inquiry. It is motivated by "fear, conservatism, and indolence." The only way to deal with mistrust and resistance, he says, is to elaborate "an adequate methodology" of research in such a fashion that experiments "can be repeated at any time" (p. 46).

All of which the skeptic must heartily agree with. There *has* been a tendency for many to reject areas unfamiliar to the science of any one day. Thus, there is the constant need to maintain open-mindedness, a willingness to examine and explore. Rejdak's view that in the last analysis only the experimental laboratory will decide the issue is concurred in by skeptics: We want adequate methodology and repeatable experiments!

Alas, as one examines what is offered as new and revolutionary "future science" one can only be dismayed. It is one thing to claim that one's critics are unfair and another to provide hard demonstrable evidence that one is truly adding to the fund of scientific knowledge. It is one thing to assume the mantle of the "scientist" (a fledgling Galileo), and another to earn it. Merely to proclaim "future science" doesn't make it so. Often the people engaged in paranormal science are believers willing to leap in and accept "paranormality" without sufficient verification or alternative explanations.

In one section of the book the editors assert that the emerging field, which goes under different names—"psychotronics," "paraphysics," or "psychoenergetics"—involves new concepts of energy and space. Thus in an article, "New Fields, New Laws," William A. Tiller (professor of materials science at Stanford University) says: "From experiments on telepathy, psychokinesis, manual healing, and travelling clairvoyance, we seem to be dealing with *new energy fields* completely different from those known to us via conventional science. . . . The universe seems to organize and radiate information in *other dimensions* than just the physical space-time frame with which we are familiar. From experiments with P.K., radionics, materialization-dematerialization, etc., the cause-effect relationship seems to follow a different path or 'field line'. . ." (p. 29).

White and Krippner maintain (Introduction to Section II, "The Occult Forces of Life: Ancient Mysteries, Modern Revelations") that there is a "psychic factor" or "fifth force." This is apparently similar to the ancient "vitalistic" force. Wilhelm Reich's "orgone energy" is part of it. This force permeates everything; it is basically "synergetic." Some call it an "odic force," others an "L field" (life field); one aspect of it is the "T field" (thought field). The Russians, we are told, use the term *bioplasm*. The skeptic asks what the evidence is

for this. Some of the contributors to this volume refer to such "experimental data" as Kirlian photography, which most likely is due to moisture, not a special "emanation." White and Krippner indicate some of the other "evidence," which makes one wonder if they are dealing in science or metaphysics and religion:

> The energy is observable in several ways: as isolated pulsating points, as spirals, as a cloud or "aura" surrounding the body, as a flame, as a tenuous web of lines (the Yaqui sorcerer don Juan's "lines of the world" and the occultist's "etheric web"). (p. 56)

Gopi Krishna, in the article "Prana: The Traditional and the Modern View," tries to relate this life force to "Kundalini," the ancient Sanskrit word for "a form of bioenergy, the life force in humans which drives evolution and leads the race to a higher state of consciousness" (p. 81). Every individual organism, he affirms, "is surrounded by an aura or a sheath of bioenergy" (p. 85). The critic, of course, is dubious about the use of "aura" and whether it has been experimentally confirmed as "psychic energy."

In a mystifying part of the book (Section III, "The Geometry of the Paranormal: Other Dimensions, Higher Planes") the editors postulate the concept of a "multidimensional, dynamic structure of space" that provides a means for "instantaneous transmission of energy and information over great distances" and which allow "living but non-physical entities to exist" (p. 122).

White and Krippner and their contributors claim that theoretical physics is now bringing in the notion of "hyperspace, 'wormholes' in space that connect interpenetrating universes." But they again move from science to theology. "The concept of nonphysical planes or supersensible realms coexistent with physical reality is an ancient one," they say. "In metaphysical and mystical tradition, space is not a vacuum but a plenum." It is ". . . as Maharishi Majesh Yogi terms it, the creative field of intelligence from which all knowledge and all possibilities for physical existence is manifested" (p. 123). They quote Anglican canon A. P. Shepherd, who describes these "higher worlds." The most commonly mentioned "other world" is, they tell us, "the kingdom of the dead." And they refer to the work of Raymond Moody, Karlis Osis, and Elisabeth Kübler-Ross for supporting the possibility of "a first plane of the afterworld." "That being the case, the next step of science is to begin mapping the interpenetrating vital world and formulatize the laws of topological transformation between space and hyperspace" (p. 124). (The fact that in the work of Moody, Osis, and Kübler-Ross the clinical definition of death is unclear, and the samples taken often unsystematic, is never raised by the editors. What they are most likely describing is the dying process of a number of patients who have been resuscitated from lung or heart failure. None have ever been brought back from brain death, as far as I am aware.)

In reading White and Krippner's account of science, one wonders if they are really serious? The term *counterspace* is used by them to describe "the nonphysical realm in which the etheric formative forces arise" (p. 127). Among its characteristics is "levity," which is not merely negative gravity or the absence of gravity, "but rather a primary force." "Gravity thrusts outward from the earth, pulling matter downward; levity streams inward to the earth from the cosmos, supplying the means, for example, of getting Newton's apple up in the tree in the

first place" (p. 127).

Their account becomes more amusing as one reads on, for their concept of space is able to account for "pyramid power" and dowsing. "Ley lines" are also called upon. These form a network or grid upon the surface of the earth and are associated with ancient sacred sites, pagan temples, burial mounds, terrestrial zodiacs, and, later, churches and cathedrals. One wonders whether we are dealing with science or a fairyland of speculation. White and Krippner again:

> This gridwork is said to coincide with a wide range of natural and paranormal phenomena, including the following: the "Bermuda Triangle" and its purported corresponding eleven areas of strange disappearances ("windows" into hyperspace?) equally spaced around the globe above and below the equator; the planet's tectonic plates; the overlapping of the center of all world magnetic anomalies at the nodes and edges of the crystallike lattice; the occurrence of all global centers of maximal and minimal atmospheric pressure at the the nodes of the grid; paths of hurricanes, prevailing winds, and global currents follow the ribs of the grid; the large deposits of mineral ores which lie along faults or folds in the Earth's crust, which in turn often follow the grid's ribs; and the frequent location of birth places of ancient cultures at the intersections of the grid. (p. 130)

This collection contains so much nonscience, all parading as "science," that it is difficult to deal with all of the articles in this review. Three stand out for the "Uri award" of the year—an award that Martin Gardner has suggested be bestowed every year to deserving recipients for naiveté:

1. Stanley Krippner contributes his own piece to the volume: "A First-Hand Look at Psychotronic Generators." This refers to the invention of Robert Pavlita, which is supposedly capable of storing and applying "biological energy." Krippner visited Pavlita in Czechoslovakia to inspect his device. The psychotronic generator allegedly is able to pick up energy from a living person and do wondrous things, such as "kill fruit flies." Krippner reports that "once, a generator in Karlsbad was activated in Bradoc, Králové, a distance of over 150 miles" (p. 430). Krippner admits that he used almost no controls in observing Pavlita to ascertain whether the psychotronic generator was a hoax or a "scientific breakthrough." All of this is reminiscent of the search for the perpetual-motion machine.

2. D. Scott Rogo, in an article on "Paranormal Tape-Recorded Voices: A Paraphysical Breakthrough," also qualifies for the Uri award. His article discusses the work of Friedrich Jurgenson in Sweden and Konstantin Raudive in Germany, both of whom announced to the world in 1959 and the early sixties that they were able to record the voices of the dead. The question that can be raised is whether the mysterious voices were not chance radio and shortwave broadcasts picked up by the tape recorder as background noise. Or was fraud involved and were the participants shrewd ventriloquists? Many critics have pointed out that what the voices are saying is unclear and that their meaning depends upon subjective interpretation. Rogo rejects these alternative explanations and offers two possibilities: First he maintains that "there is some *a priori* evidence" that they are indeed the voices of the dead. Another explanation, he says, "is that the voices are produced psychokinetically by the subjects themselves" (p. 461).

Although Rogo complains that most parapsychologists are leery of this entire "field of research," he is not himself hesitant and he is willing to conclude: "I believe the phenomenon is a breakthrough of the first magnitude" (p. 464). How many times have breakthroughs been announced by uncritical investigators all too willing to draw hasty generalizations on the basis of dubious findings and poor controls?

3. Most likely the Uri award *with distinction* should be awarded to Julius Weinberger—though there are such a plenitude of candidates in this volume that it is perhaps difficult to select from among them. Weinberger is described in the list of contributors as having "been active in psychical research for over 30 years." In his article "Apparatus Communication with Discarnate Persons," he describes his efforts to communicate with dead persons. He does it without the need for a human medium, rather he uses a sensitive plant, *Dionea muscipala* (the Venus fly-trap), as intermediary. He tells us that he first noticed many years ago that he had "a peculiar tingling sensation on my scalp" in the presence of such plants. This, he says, "was a well-known effect of the presence of discarnate persons." The procedure he employed was to use special equipment (a vacuum tube amplifier, electrodes, etc.)—how *scientific* you are when you use gadgets—connected to the plant, which transmitted messages from the dead. He first attempted "contact" with such discarnate persons as might be present to see if they were interested in cooperating with the experiment. "This was done by reciting a brief prayer, such as the Lord's Prayer, followed by prayers of a personal nature, then by a request for such cooperation . . ." (p. 471). Weinberger said that during the prayer period the "scalp sensation" soon became manifest, which was taken to indicate the discarnate persons were indeed present and ready to cooperate. In such experimental situations, Weinberger presented questions to the discarnate person and recorded the pulse signals received via the plant in response. In 138 usable trials, he recorded 94 hits, and he says "the odds against chance are 1 to 93,000." Weinberger dismisses "unconscious PK" as a hypothesis to explain the phenomena, and considers the discarnate agency explanation "as most probable" because of "the presence of the 'scalp sensations' during the experimental period" (p. 483). He concluded that "since the 'body' of a discarnate person may be considered as an energy field, it is conceivable that such a person could penetrate or merge with the 'aura' of a human being, and by some process presently unknown to us he could utilize some of the human field to influence a sensitive plant"!!! (p. 484).

I have deliberately heavily quoted from *Future Science* to avoid the charge that I am unfair to the paranormalist. I have operated on the "give them enough rope . . ." premise. The jacket of this book tells us that *Future Science* is a "compilation of the latest work of scientists who are poised on the edge of a new understanding of how reality is structured." Regretfully, the editors did not seem to use any rigorous standards to judge inclusion of the articles in this volume. Even worse, they themselves seem to be uncritically receptive to virtually any and all speculation offered. In my judgment *Future Science* should be retitled *Bad Science, Non-Science,* or *Pseudoscience,* or better yet, *Future Poetry*, although it is not even very good poetry. ●

The Amityville Horror. by Jay Anson. Prentice-Hall, Englewood Cliffs, N.J., 1977. 201 pages, $7.95.

Reviewed by Robert L. Morris

This book claims to be the true account of a month of terrifying "paranormal" events that occurred to a Long Island family when they moved into a house in Amityville, New York, that had been the scene of a mass murder. Throughout the book there are strong suggestions that the events were demonic in origin. On the copyright page, the Library of Congress subject listings are "1. Demonology—Case studies. 2. Psychical research—United States—Case studies." The next page contains the following statement: "The names of several individuals mentioned in this book have been changed to protect their privacy. However, all facts and events, as far as we have been able to verify them, are strictly accurate." The front cover of the book's dust jacket contains the words: "A True Story."

A close reading, plus a knowledge of details that later emerged, suggests that this book would be more appropriately indexed under "Fiction—Fantasy and horror." In fact it is almost a textbook illustration of bad investigative journalism, made especially onerous by its potential to terrify and mislead people and to serve as a form of religious propaganda.

To explore this in detail, we first need an outline of the events that supposedly took place, as described in the text of the book, plus a prologue derived from a segment of a New York television show about the case.

On November 13, 1974, Ronald DeFeo shot to death six members of his family at their home in Amityville. Shortly after, DeFeo was sentenced to six consecutive life terms, despite a plea for insanity by his attorney because DeFeo claimed to have heard voices in the house telling him what to do.

In the early middle of November 1975, George and Kathy Lutz were shown the house by a realtor who, at the completion of the tour, told the couple of the house's history. They nevertheless agreed to buy the house, since the price was good.

On December 18, the Lutzes and their three children moved in. Their house was blessed by a friend, Father Frank Mancuso, in the afternoon. Earlier that day Mancuso had lunched with four friends, including three priests who had advised him of the house's history and had suggested he not go. During the blessing, Mancuso heard a strong, masculine voice say, "Get out!"

Twenty-eight days later, on January 15, 1976, the Lutzes moved out, leaving their possessions behind. During these twenty-eight days the Lutz family, so the story goes, was beset by a wide variety of unusual events. Some were physical: a heavy door was ripped open, dangling on one hinge; hundreds of flies infested a room in the middle of winter; the telephone mysteriously malfunctioned, especially during calls between the Lutzes and Mancuso; a four-foot lion statue moved about the house; windows and doors were thrown open, panes broken, window locks bent out of shape; Mrs. Lutz levitated while sleeping and acquired marks and sores on her body; mysterious green slime oozed from the ceiling in a

hallway; and so on. Some phenomena were experiential: Mrs. Lutz felt the embrace and fondling of unseen entities; Mr. Lutz felt a constant chill despite high thermostat temperatures; the Lutzes' daughter acquired a piglike playmate; the Lutzes saw apparitions of a pig and a demonic figure; the children misbehaved excessively and the family dog slept a lot and avoided certain rooms; marching music was heard; et cetera.

During this same period of time, Father Mancuso is said to have experienced unusual phenomena also, although his only contact with the Lutzes afterward was an occasional phone call (some calls got through, although most did not). A few hours after his blessing of the house, the hood of his car smashed back against his windshield, tearing loose a hinge, and the door flew open. Then the car stalled. In the following month, Mancuso was beset by a series of illnesses, including sores on his hands and the flu, and a strong unexplained stench emanating from his room at the rectory following a votive Mass on behalf of the Lutzes.

Approximately two weeks after they moved out, the Lutzes met William Weber, an attorney representing Ronald DeFeo, through a mutual friend. A week later, on February 5, Weber stated on a local TV news program (described in the prologue) that he hoped to prove that some force capable of influencing human behavior (including his client's) existed at the Amityville house, that he had commissioned scientists to rule out certain kinds of physical phenomena, and that it would then be turned over to a group of psychic researchers. Two weeks later the Lutzes held a press conference in Weber's office, at which time they announced that they intended to keep the house for awhile but not live in it, and were awaiting the results of an investigation by parapsychologists and other professional occult researchers.

On February 18, according to the epilogue, a group of people spent the night at the Amityville house and conducted informal investigations, including three séances. Included were a clairvoyant, a demonologist, two psychics, two parapsychology field investigators, and a local TV news crew. Several reported unusual subjective impressions, but that was all. In March the Lutzes moved to California and posted their house for sale.

Since the book's publication, additional information has emerged. According to Curt Suplee's book review in the *Washington Post* (Dec. 9, 1977), the Lutzes were at about this time advised by a friend to sell their story to Prentice-Hall. A Prentice-Hall editor put the Lutzes in contact with a New York writer of documentary scripts, Jay Anson. Working from tapes provided by the Lutzes, plus some interviews with Father Mancuso (and local police officials, according to Anson's afterword), he turned out the book in three to four months. The Lutzes and Anson share the book copyright, although Anson retains the movie rights exclusively. The book has become a national best-seller in hardback and is scheduled for paperback release. The Lutzes have emerged from seclusion and have appeared on television.

According to an article in *People* (Feb. 13, 1978) by Burstein and Reilly, the Amityville house is now owned and occupied by a new family, who report no unusual phenomena save for extensive harassment by tourists and the curious. The new family "have sued the Lutzes, Prentice-Hall, and Anson for $1.1 million

in damages—and are trying to enjoin them from characterizing their story as true."

This is the picture as it has been presented to the public. The basic problem is that Anson appears to have made only meager attempts to assess the truthfulness of the Lutzes' story, contrary to his own claims in the book. His only listed sources of information are joint tapes made by the Lutzes, plus additional interviews with Father Mancuso and local police officials. He does not claim to have talked directly with the Lutzes or to have questioned them in any way. Father Mancuso is a poor witness because he set foot in the house only once, and that immediately after having been warned by other priests to stay away. Local police officials were not directly involved in any of the phenomena. The most interesting witnesses would have been others who reported unusual feelings in the house (to see if they corroborated the Lutzes' descriptions of their experiences) and the repairmen called to fix damage done to the house, who would have commented on the nature and extent of the actual damage done. No interviews were described with the scientists mentioned by DeFeo's lawyer or with the parapsychologists from the Psychical Research Foundation. Since I am a former employee of the PRF, I know both investigators. One of them, Jerry Solfvin, had indeed talked to Anson at some length by phone. He described the PRF's involvement in a letter to me as follows:

> We *didn't* carry out an investigation there—just an informal visit on my part, and a collecting of the Lutzes' reports (after they moved) by George K. The case wasn't interesting to us because the reports were confined to subjective responses from the Lutzes, and these were not at all impressive or even characteristic of these cases. All in all, the family moved out rather quickly (about a month after moving in) and refused to return, making further investigation less appealing to us.

In addition to his failure to collect (or at least to include) interview data from the most important witnesses, Anson never (apparently) visited the house himself to check on the damages described, collect impressions of his own, or do investigative journalism of any thorough sort. Thus Anson's statement in the afterword (p. 197), "To the extent that I can verify them, all the events in this book are true," is patently false. It should read, "To the extent that I *bothered to* verify. . . ."

The flaws of this book as evidence for the "paranormal" can be further seen by considering some of the basic problems of spontaneous cases investigations in parapsychology, in general.

1. *Witnesses may be totally unaware of factors involved in the production of certain phenomena.* For instance, the flies that suddenly appeared in one of the rooms (pp. 29, 45) may have hatched from eggs in something that was being stored in the room (at the time it was mainly a storage room), perhaps even something rather recently purchased. On one occasion following a levitation by Mrs. Lutz, it was noticed that she had deep lines on her face, making her look very old, which soon disappeared. These lines may have been produced by wrinkles in the material she was sleeping on, a common phenomenon that could easily be misin-

terpreted given the circumstances. Once such an event is past, it becomes essentially impossible to recreate the original circumstances completely, such as to ascertain the absence of such "hidden factors," although often a partial recreation can enable us to ascertain their presence.

2. *Witnesses may have faulty perception of what actually happened.* Father Mancuso had been warned away from the house because of its history by the priests with whom he had just lunched, and he was nervous in the house. There are many ordinary mechanical noises that contain some or all of the acoustical frequencies found in human voices, and he may have perceived one such sound (familiar to the Lutzes and therefore ignored by them) as a human voice saying the short sentence, "Get out" (p. 17). Also, on page 191 we have the following: "Then, still in his dreamlike state, George saw Kathy levitate off the bed. She rose about a foot and slowly began to drift away from him." If George was still in a dreamlike state, he could easily have greatly misinterpreted his wife's bodily position and movements. On pages 96-97, an incident is described in which George finishes putting out a fire in the fireplace, then notices two "unblinking red eyes" in the window, eyes which could easily be only the reflection of dying embers. They then went outside and in the light of a flashlight noted cloven-hoofed piglike tracks leading around the house. Yet such tracks could easily have been produced by melting ice from the eaves of the house into the snow below, in which case the "tracks" would be expected to follow the contour of the house.

3. *Witnesses may have a faulty memory of the events that happened.* This problem, of course, potentially arises throughout the book. On page 29 is the statement, "Kathy's bathroom door was at the far end of her bedroom," which is contradictory to the floor plan on page 10. On page 81 George Lutz describes having been told by the Amityville Historical Society that "the Shinnecock Indians used land on the Amityville River as an enclosure for the sick, mad, and dying." Yet Curt Suplee's recent inquiries of this and another historical society reveal that the Massapequa Indians lived near Amityville but that the Shinnecocks lived nowhere around Amityville. Apparently either Lutz was misinformed or he misremembered, getting his tribes confused.

4. *Witnesses may give biased or faulty impressions of their own memories.* In making their tapes, the Lutzes would have been highly motivated to remember and report selectively those incidents which made the most interesting listening and the best case. Any tendency to exaggerate could not be teased out by comparing the Lutzes' separate versions for consistency because they made the tape together and were free to evoke a consensus before speaking. For instance, on page 26, it is said of the Lutz children, "Ever since the move, they seemed to have become brats, misbehaved monsters who wouldn't listen, unruly children who must be severely punished." In other places (for example, pp. 35, 54), one is given the impression that the Lutz children started to misbehave only after moving to the new house, and that the Lutzes were only now having discipline problems. Yet on page 86 we read, "Later in the afternoon was the second time Danny and Chris threatened to run away from home. The first had been when they lived at George's house at Deer Park. He had restricted them to their room for a week, because they were lying to him and Kathy about small things. They had revolted

against his authority: Both boys refused to obey his orders, threatening to run away if he also forced them to give up television. At that point, George called their bluff, telling Danny and Chris that they could get out if they didn't like the way he ran things at home." The following paragraph states that the children had run away from home but had returned and, "For a while, they stopped their childish fibbing. . . ."

In a similar vein, the family dog, Harry, is described in detail on page 165 as being ill at ease in the basement, finally running from it, and later (p. 180) as refusing to enter the basement. Yet on page 174, brief mention is made of the fact that Harry spent the night in the cellar, with no mention of Harry's behavior at that time. In addition to such selective emphasis and exaggeration, there are instances throughout the book in which the Lutzes describe themselves as unusually calm in the face of what would appear to be tremendously unnerving events.

5. *Witnesses may deliberately fabricate events.* Although it is difficult to separate straight intentional fabrication from some of the possibilities mentioned earlier, there are some suggestive examples. On page 81, Lutz describes having learned about the Shinnecock Indians from the Amityville Historical Society. Yet according to Curt Suplee, the Society not only claims that Lutz's information about the Shinnecocks is completely false, they also claim never to have heard from him. It is possible, of course, that they are the ones with poor memories.

A more telling example involves the Lutzes' descriptions of the weather. A comparison of the weather as described in the book with the weather data my staff and I have extracted from microfilmed copies of the *New York Times* and the *Los Angeles Times* (*N. Y. Times* was unavailable at my library for December) reveals some rather major discrepancies. Three examples will suffice.

During the days in December covered in the book, the *Los Angeles Times'* daily record shows only one twenty-four-hour precipitation above .18 inches; on December 27, the temperature in New York City ranged from a low of 33°F to a high of 53°, and 1.97 inches of rain fell. Yet on page 64, the weather on December 27 is described as follows: "The weather was bright and clear, the temperatures hovering in the low teens." Perhaps the Lutzes made an honest mistake and were off by a day. On page 57, we read of December 26, 5:30 p.m.: "The roads were reported to be icy from the recent snow, however, and it was a Friday night." December 26, 1975 was a Friday night, so the Lutzes are correct here. The description of December 28 makes no mention at all of the weather.

On pages 83-85, a heavy snowfall is described for December 31, with the snow starting at about 4:30 a.m. and continuing past 10:00 a.m., with a local radio station predicting the Amityville River would be completely frozen by nightfall. The *New York Times* describes light rain that day, with a temperature of 37°F at 8:30 a.m. and a high of 44° at 12:50 p.m. No such snowfall is reported for the adjoining days, and since it was December 31, the likelihood of a confusion over dates is rather low.

Perhaps the strongest example concerns a torrential rainfall that supposedly occurred on January 13, forcing the Lutzes to spend an extra night in their dreaded house. Confusion about dates seems especially unlikely because it was the last day the Lutzes spent in the house, and because the rainstorm had a tremendous

impact upon their behavior (and occurred at just the right moment in the story, from a dramatic standpoint). On page 178, we read: "The rains and wind picked up in intensity, and by one o'clock in the afternoon, Amityville was hit by another storm of hurricane strength. At three, the electricity went out, but fortunately the heat remained in the house. George switched on the portable radio in the kitchen. The weather report said it was 20 degrees and that sleet was pelting all of Long Island. Since the radar showed an enormous low pressure system covering the entire metropolitan area, the weatherman could not predict when the storm would subside." On page 179, we read: "By six in the evening, the storm still hadn't slackened. It was as though all the water in the world was being dumped on top of 112 Ocean Avenue." On page 180, we read: "Torrents of water were still smashing against the house, and he somehow knew they wouldn't be allowed to leave 112 Ocean Avenue that night. He picked Kathy up in his arms and took her to their bedroom, noting the time on the kitchen clock. It was exactly 8 p.m." On page 181, we read: "At one o'clock, George felt he was freezing. Because of the noise of the storm raging outside, he knew there was no hope of heat in the house that night from the oil burner." The storm is described as having stopped shortly after.

The *New York Times* for January 14 and 15 gives a different picture of the weather during the day and evening of January 13 and early morning of January 14. The temperature rose above freezing at 11 a.m. on the thirteenth and rose steadily throughout the day and evening. Precipitation from 7 a.m. to 7 p.m. was 0.01 inches. From 7 p.m. to 7 a.m. the following day, there was 0.39 inches of rainfall. This was the only rainfall of any extent that occurred January 10 through January 14. One could argue that Amityville may have experienced its own storm so limited that it did not reach New York City or get mentioned in the weather news of the area. However, the radio forecast in the book described a large low-pressure area over the entire metropolitan area. Also, such "micro-storms" are by their nature of short duration; the storm in the book lasted over twelve hours. Such discrepancies between the weather described in the book and the weather as actually recorded seem, on the surface at least, to be more than mild exaggerations for dramatic purposes. The last storm, especially, was described as influencing the Lutz family's behavior over a considerable period of time. I should mention that the reason I troubled to look up the weather to begin with was my curiosity about the weather report's description of rain and sleet occurring in 20-degree weather.

6. *The investigator may not collect enough information to assess the reports of witnesses.* An example of this is Anson's (the investigator, for present purposes) apparent failure to corroborate the Lutzes' accounts by interviewing other key witnesses or by double-checking some of their factual statements, such as the weather descriptions.

7. *The investigator may collect and disseminate incorrect information.* Anson describes the parapsychologists as from the Psychical Research Institute (pp. 194-195), whereas the correct name is Psychical Research Foundation. The TV news reporter states that the Lutzes moved in on December 23 (p. 2), whereas a couple of pages later it is clearly stated that they moved in December 18.

8. *The investigator may selectively report the data he has collected.* Anson describes the fact that parapsychological investigators were on the scene, but presents no information about their opinions. Yet Jerry Solfvin told me that he had talked extensively with Anson by phone and Anson was aware of the PRF's response to the case. Why was nothing said of this in the book? Perhaps Anson did indeed interview other key witnesses but isn't discussing this material because there was nothing exciting to report.

9. *The investigator may deliberately elaborate upon the details of the case.* Throughout the book, Anson fills in details of dialogue and the Lutzes' behavior that would seem to go beyond their capacity to recall particulars, including very trivial events and dialogue. Also, much of the distortion or elaboration that was placed at the Lutzes' doorstep in the above paragraph may in truth have been the product of Anson's imaginative typewriter. One would need access to the original tapes to resolve where the responsibilities lie.

10. *The investigator may deliberately fabricate events to buttress a case.* Once again, it may have been Anson who created the dramatic weather discrepancies rather than the Lutzes, a question that could be resolved mainly by access to the tapes.

11. *The investigator may interpret the findings in a biased way, thus misleading the reader.* Anson appears to have a bias in favor of occult interpretations of the phenomena in the case. Sometimes it shows up in a minor way, as on page 81: "John set up residence within five hundred feet of where George now lived, continuing his alleged devil worship." Apparently Anson regards the worship as more than merely alleged. Sometimes it is more general. On pages 198-199, Anson sounds impressed by the fact that many of the phenomena reported by the Lutzes also occurred in other reports of "hauntings, psychic 'invasions,' and the like"; yet if one considers the phenomena reported in other studies of anomalous events, one finds that such a tremendous variety of events have been reported that such parallels are almost inevitable.

In his afterword, pages 199-201, Anson quotes in detail the demonological interpretation of one of those who examined the case, yet gives no comparable space to the PRF investigators or others whose interpretations might stick closer to the information at hand. Although he states that we are not obligated to accept such psychic interpretations, he also states (p. 201) that any others would involve "an even more incredible set of bizarre coincidences, shared hallucinations and grotesque misinterpretations of fact."

12. *It is very difficult to assess the role of coincidence in any assessment of spontaneous cases.* For example, much was made of the static on the telephone lines between the Lutzes and Father Mancuso. Yet we have no knowledge of how likely such an occurrence of static would be by chance without knowing whether the lines were in general filled with static for one reason or another. Coincidences do happen and when we notice them we tend to impute meaning to them.

For all these reasons, *The Amityville Horror* has relatively little value as documentation of a real set of anomalous events. On the surface, it looks as though various problems, including inconsistency, exaggeration, and distortion, are abundant, and there is suggestive evidence of fabrication. If the Lutzes and

Anson are to continue to maintain that this is a true story, they are obligated to clarify the discrepancies mentioned. If they can do so, fine and dandy. If not, then the public should be informed loudly and clearly that this book and any further representation of it in the media should be regarded as entertainment only. As it stands, the cover of the book would appear to constitute false advertising and should be handled in the same way as false advertising is handled in analogous cases. ●

The World Almanac Book of the Strange. By the Editors of the World Almanac. New American Library, New York, 1977. 482 pp., paperback, $2.50.

Reviewed by James Randi

Several members of the Committee for the Scientific Investigation of Claims of the Paranormal were contacted months before this book went to press. The results of those consultations are obvious, though we understood from the beginning that many of our comments and corrections would not be incorporated, simply because of a lack of time to rewrite certain sections; books just do not get into print if every last-minute revision and correction is implemented. Where the Committee was able to serve the editors, accounts of apparent miracles are well tempered—in other places, the usual misinformation is repeated.

The cover advertises this very informative and intriguing volume with: "The world is full of amazing things: strange people, creatures, places, powers, practices, miracles, facts, legends, frauds, objects, customs, religions, and every other phenomenon that anyone has ever wondered about." Inside, we come upon many genuine and fascinating items such as "killer bees," black holes, Druids, Tiahuanaco, and Oak Island. Then we must suffer through remote viewing, Peter Hurkos, the "Philip Phenomenon," and other similar codswollop. But it is all quite well done, despite the lack of a dissenting view on, for example, the Targ/Puthoff "Mind Reach" experiments that have since proved rather less than well designed and implemented. Such data were simply not available to the editors at the time, and in talks with George E. Delury, editor of *The World Almanac*, I have been assured that future editions, when revised, will include the CSICP's modifications.

The Geller myth is particularly well handled; in fact, the editors consulted the CSICP on this particular case just after the group was formed. The resulting account shows what can be done to create an intelligent and adequate coverage of a controversial and difficult subject, though Geller is hardly the cult-figure that he once was, now that the truth is out. The work of Kammann and Marks, in New Zealand, and Martin Gardner, Ray Hyman, and others of the Committee is quoted and referred to many times, and the truth about Geller and the

"research" conducted on his tricks becomes obvious. Yet the very real fascination of the subject and the strange people surrounding him comes through strongly. A myth need not be pampered to be interesting as story material.

Needless to say, there are scores of places where the CSICP would have liked to have been involved. Valuable insights and numerous negations would have been available to the editors on such subjects as Kirlian photography, Scientology, dermal vision, and the secret life of plants, to name but a few. And Committeeman Philip Klass has a great deal to add to the editors' knowledge of the UFO matter!

It is well to be thankful for small blessings. Our Committee is referred to in this book in error as the "Para Committee" and as the "Committee to Investigate Claims of Paranormal and Other Phenomena," since they first heard of us while we were thrashing about for a proper and descriptive name. Also, we are listed under the section titled, "Strange Groups." But we *are* listed, and the editors have shown their good intentions and their willingness to present the facts by consulting us where possible. We trust that the CSICP will play a larger role in subsequent editions of this book, in spite of Mr. Delury's report that one customer demanded his money back because the book was "negative." Delury countered this by sending the man a copy of a letter from another reader who appreciated the "balanced" approach.

The book is quite a grabber. But it must be taken "with a grain of salt." I recommend a grain about as big as a basketball.

Reviewed by Kendrick Frazier

The preparation of a survey of the entire field of strange phenomena and strange things (not just the paranormal) must have seemed a formidable task for the editors of this compendium. Especially since they, in contrast to so many others before them, set up the laudable goal of attempting valiantly to present probable explanations of the mysteries, when possible, and otherwise to try to sort fact from fiction and sense from nonsense. The rarity of such attempts in itself makes this effort almost cause for exaltation.

Considering the scope of the presentation (from alpha rhythms, aspirin, and astrology to Velikovsky, voodoo, and the Zeti Reticuli controversy) and the quantity of material they had to assimilate and try to put into perspective, the editors have to be given generally good marks. There's a refreshing lack of ideological bias and most everywhere a tone of honest searching for the truth of the matter, even when that may seem less mysterious than many book buyers might wish to know. They don't always succeed, but at least you get the feeling their hearts and minds are in the right place.

The book's quest for distinctions is one quality nearly all should appreciate. Different hypothesized phenomena have different levels of scientific credibility, and too often those distinctions are not made. Balance is sought here not just by mechanically contrasting claim and counterclaim, which too often is as far as some efforts at "objectivity" go. When a harsh judgment is clearly called for by

the evidence, the editors have, at least in some notable cases, made it. They have had the courage to place the Bermuda Triangle, for instance, in a small section at the end reserved for "hoaxes and forgeries," right there with the Piltdown man. The detective work and analyses by Larry Kusche clearly justify that categorization, and the editors have had the good sense to recognize that. Similarly, a twelve-page section on astrology distinguishes between popular and serious astrology, mentions various scientific studies of astrology, and concludes forthrightly, "In spite of these studies, there is no scientific evidence that astrology has any validity."

The detailed section on Uri Geller is, as James Randi noted, well informed and intelligently handled, and devastating to Geller in its conclusions, due in no small measure to the factual evidence about Geller's methods made available by Randi himself.

In contrast, I found the section about Immanuel Velikovsky disappointingly naive and incomplete. Two paragraphs are devoted to critics' views, but no mention is made of the symposium on Velikovsky at the American Association for the Advancement of Science annual meeting in San Francisco in 1974, which presented all the facts necessary to discount his arguments for good. Unfortunately, the book emanating from that symposium, *Scientists Confront Velikovsky* (Cornell University Press, 1977) became available only late last fall, after the *Book of the Strange* was in press. But still a reference to Carl Sagan's ten different lines of *evidence* against Velikovsky's arguments (rather than just a critical *comment* by Sagan) could have been obtained and included. The book trots out the old, distorted arguments about Velikovsky's predictions later being "verified" by science, but the misinformation surrounding these supposed verifications is notorious. That Venus would prove hot was predicted by some scientists long before Velikovsky did so, and for the *right* reasons. The Apollo landings *did not* confirm that the moon's surface had been molten only a few millennia ago, as Velikovsky had predicted. They revealed that it had been molten some four *billion* years ago, an entirely different matter and irrelevant to Velikovsky's arguments of recent catastrophism. The section leaves the mistaken impression that the scientific verdict on Velikovsky is still out, a misstatement exposed in all its baldness by Anthony Aveni's recent discussion in *Science* (January 20, 1978) concluding: "Velikovsky is flatly and totally disproven. . . . The final nail has been driven. It is to be hoped that we can now move on to more exciting things."

Other sections probably have some of these same kinds of deficiencies. The section on parapsychology is perhaps a little over-generous to proponents of that field. The section about UFOs, detailed as it is, seems weak and in need of more scientific input. But it does make reference to *some* of Phil Klass's explanations of sightings and it does list Klass's ten UFOlogical Principles, cautionary points so useful that I once went to considerable effort to compile them onto a single page (they're scattered throughout Klass's book *UFOs Explained*) so I could make copies and distribute them to friends.

The positive value of the book's approach generally exceeds its understandable weaknesses. It has a reasonable, one might even say hard-hitting, preface signed by World Almanac Editor George E. Delury. He makes such worthy

points as, "Key-bending psychics, UFOs, lost continents, and ancient astronauts are mere curiosities compared to the genuine miracles of nature," and "The human capacity for credulity and self-delusion is itself one of the most mysterious things about *Homo sapiens*," and (after listing a dozen or so occult subjects) "Ninety-eight percent of this stuff is balderdash." He explains sympathetically why scientists often choose not to waste time and reputation in some of these areas. Still, he eschews a "stern, rigidly scientific, Establishment point of view" in favor of a fair, open-minded, and fact-based airing of issues and evidence, and who can disagree when put in those terms?

One final note that deserves appreciation: The book greatly benefits from consultations with knowledgeable critics of paranormal claims. Delury concludes with a request for updated information from readers, experts and laypeople alike, for inclusion in future editions. This openness to the facts and willingness to modify statements in light of new evidence is a commendable approach and should be encouraged. ●

Psychic Archaeology: Time Machine to the Past. By Jeffrey Goodman. G. P. Putnam's Sons, New York, 1977. $9.95.

Reviewed by John R. Cole

"On a world-wide basis, archaeology is undergoing a revolution where ESP is replacing the spade as archaeology's primary tool," according to Goodman (p. 161), and this book is an effort to document the revolution. The fact that this is nonsense does not intrude upon the argument: at best or worst, ESP has not made much of a dent in archaeology as practiced by professionals, but it is growing in regard to the amount of popular attention it receives.

Goodman raises two basic issues: (1) ESP as a means of finding archaeological sites (dowsing, broadly defined), and (2) ESP used to interpret sites and artifacts, reconstructing culture history. Dowsing claims should be tested by people familiar with the subject. His basic case consists of his discovery of a site near Flagstaff, Arizona, whose topographic features appeared to him earlier in a vivid dream and were later pinpointed by a long-distance psychic reader, Aron Abrahamsen, communicating from Oregon. Goodman's dream seems untestable, but the psychic reader's predictions may be more open to scrutiny. Goodman gave sealed copies of them to various people before digging began, and he says 52 out of 59 were found to be accurate.

The author's identification of artifacts *may* be in error (without examining them and the site I cannot really comment except to note that artifact identification can be difficult under the best of conditions, let alone in a 10' × 10' test pit). Assuming he does have an archaeological site, to what extent does he have evidence of ESP? Even though odds are against finding a site at a single random

location, Goodman may simply have been lucky. Like many ESP "experiments" this one seems to seize upon a possibly idiosyncratic "success" rather than a thorough series of controlled experiments.

Abrahamsen's identification of features of buried deposits needs to be examined critically to rule out chance, deception, misinterpretation, and wishful thinking, and the burden of proof is upon Goodman, not the skeptics whom he invites to dig at the site for themselves. At the least, these methods must be applied to other sites before they are accepted. Unfortunately the psychic "lost interest"—as so often happens when skeptics approach such claims! Goodman's book will leave true believers believing and doubters doubting on this score.

So we are left to examine some of the nonmethodological claims in the book.

Goodman's claims and interpretations based on psychometric readings are so odd—and refutable—that an informed reader must keep asking if the book is an immense put-on. Goodman either has little knowledge of modern archaeology and scientific analysis or he suppresses it amazingly well. To accept most of his "psychic" interpretations one would have to throw out everything that has been scientifically established by decades of geological and archaeological research. Granting that such a revolution is possible in the abstract, Goodman's scheme of things is not a good candidate for a new paradigm, riddled as it is with chaotic, idiosyncratic, frequently misinformed "information" and theory.

He seeks to explain seven major "anomalies" in American anthropology (pp. 92-93):

1. American Indian blood genetics are "unique" in the world.
2. Indians have "unique dental and skull shape parameters" with no relationships with other world populations.
3. Why are there over 200 languages in the New World with no relationships with Asia?
4. Why is there 80,000-year-old corn pollen from Mexico City "when domestication is not supposed to have started until 9,000 years ago in the Near East?"
5. Why are there many Indian myths about ancestors coming from across water and none about coming overland via the Bering Straits land bridge?
6. *Homo sapiens* "suddenly appeared in the Old World 40,000 years ago without any evolutionary precedent."
7. Why are sites older than the Bering land bridge being discovered in the New World?

But these are either mistaken or red herrings. True, there are some anomalous pollens from a deep core in Mexico—but there is also irrefutable evidence of the evolution of domestic corn in Mexico's Tehuacan Valley dating to c. 5000 B.C. Native American biology and linguistics is just what one would expect from the migration of a small population from Siberia; there is ample evidence for the evolution of *Homo sapiens sapiens* from earlier hominid forms in the Old World, so they did *not* appear suddenly, as claimed; the most recent Bering land bridge was not the only one, and people could also have crossed by water or ice, as Eskimos do today; teeth and skulls are malleable under short-term adaptive pressures; and so forth.

Goodman's "solution" to these pseudo-problems is an influx from the lost continents of Atlantis and Mu or Lemuria—for which there is not a shred of geological, archaeological, or biological evidence.

In Arizona, he says, "I think we will find that these people were engaged in mining crystals. . . . I suspect these people used these crystals for healing and for energy purposes in ways which we today are just beginning to imagine are possible. . . . An early advanced civilization should help us resolve the mysteries associated with the origins of civilization on a worldwide basis" (p. 141). (He notes that it is necessary to date the Olmec "civilization" to 30,000 B.C. to account for subsequent developments, and he seeks evidence of the original cultivation of rye, a major Old World domesticate, in Arizona (p. 141).) From about 500,000 years ago to the present he proposes an evolution of culture from complex to simple which simply has no relationship with the well-established evidence for cultural evolution from simple to complex. He gives no evidence or theory to explain why we should reject the vast amount of logical, detailed empirical evidence to the contrary.

Much of his thought seems to be based on Edgar Cayce's visions and "readings." He asks why scientists have not investigated Cayce's claims about Atlantis and Lemuria, disregarding the vast evidence that these romantic ideas have been systematically exposed for a century (cf. Robert Wauchope's *Lost Tribes and Sunken Continents*, University of Chicago Press, 1961). He writes of "certain people" out to stop him (p. 102) and the conspiracy of silence surrounding Cayce's discoveries. He uses the classic crank technique of assertion by oblique question ("Could this have been Iltar's first temple?" p. 79), and says his claim will test the honesty of the archaeological profession.

Such grandiose claims and defenses are the hallmark of the crackpot. They ignore the scientific principle that the burden of proof is on the revolutionary, not on the orthodoxy, to disprove every weird claim which comes along.

He makes exciting and mysterious something as simple as going to a conference in Mexico City with comments along the lines of "Who would have believed there would have been three papers on psychic archaeology in our symposium?" (The organizers, participants, and anyone able to read the program six months in advance, perhaps?!) He name-drops and quotes many people out of context, and one wonders if he had permission to do so. Most of the quotes, on close reading, tend to be based on curiosity or openness to new ideas rather than the endorsements he claims (contrary to Goodman's conspiratorial theory of the Establishment out to suppress him). He seems to say, "If you're not against me, you're with me," and even the villains "against" him, such as Dr. Arthur Jelinek, seem to have an inordinate amount of patience with his unscientific work and deserve praise rather than condemnation!

Goodman's account of digging an archaeological site on federal land without a permit, incidentally, is an admission of illegal and unethical conduct, not an exciting adventure. Digging up artifacts in haste and then rushing to the University of Arizona to ask "Are these artifacts?" is an admission of unprofessional conduct and lack of training as well as of enthusiasm, which Goodman clearly has in abundance.

Goodman's argument is for the reality of ESP. His evidence, as I have tried to note, is terrible—either openly erroneous or simply anecdotal, at least as far as his psychometric interpretations go. He *may* have some real artifacts, but there are standard ways of testing that proposition unrelated to endorsements (or séances). *Perhaps* dowsing can be used to locate sites, but I would like to see a serious test of the efficacy of dowsing compared with random sampling or educated guessing based on an understanding of probable site locations. Examples of the use of dowsing in Canada, the Soviet Union, and Britain seem to be extremely selective and in any case do not represent the majority opinion in archaeology, as Goodman implies.

The net effect of this book is to cast doubt on the usefulness of ESP in archaeology, at least beyond the question of dowsing. If psychometry is possible, why does it result in either impossible claims or claims which are untestable, such as specifying the name of the original maker of an artifact?

There remains one very adaptive and "useful" feature of "psychic archaeology" which is rather ominous: Cultural resources are finite and protected by various laws requiring environmental impact statements for construction projects. Imagine the savings in overhead and labor if research were done by crystal ball rather than field survey and excavation! I only hope government agencies do not opt for this economical approach until there is better evidence than Goodman presents for their effectiveness. ●

Extrasensory Ecology: Parapsychology and Anthropology. Edited by Joseph K. Long. Scarecrow Press, Metuchen, New Jersey, 1977. 437 pp., $16.00.

Reviewed by Richard de Mille

In 1974, anthropologist Joseph K. Long of Plymouth State College in New Hampshire organized the interdisciplinary symposium reported and expanded in this book. The idea was to introduce parapsychology to anthropologists and to call paranormal events to their attention in a way that would lead to more frequent and fruitful study of "psi" in the field. The book is quite uneven, offering plenty of targets to those who wish to find fault, along with some well-considered, thought-provoking passages for readers in sympathy with the editor's purposes. Let's begin with some faults.

"Extrasensory ecology" is defined (unfortunately not until page 388) as "the examination of adaptation by studying paranormal phenomena." This means that if tribesmen rightly or wrongly believe they are solving practical problems by divination, precognition, or rainmaking, anthropologists should study this process, which is presumed to be adaptive. Both symposiast Margaret Mead and

editor Long propose that such study can and will be carried out by fieldworkers uncommitted to the reality of psi, as well as those committed, but the prevailing attitude in the book is that the events to be studied are "genuine psi phenomena" (p. 6).

Respecting the paranormal reality of psi, Long is cautious one minute, abandoned the next, vacillating between ideal detachment which removes the taint of belief and commitment to real psi which would impel fieldworkers to take anomalies seriously rather than dismiss them as superstitions. This wobbling raises an important scientific question: Will anomalies be investigated by those who do not believe they are truly anomalous, except to debunk them? Though paragons of objectivity may somewhere exist, they are scarcely represented by these symposiasts, most of whom seem heavily committed to the paranormal. The more I read parapsychology on the one hand and skeptical inquiry on the other, the more I suspect the scientific investigation of claims of the paranormal will be carried out by adversary camps no matter how fondly we may yearn for ecumenical science. The best we can hope for is a modicum of civility, which I shall try to provide here.

Long cites thirteen reports by proven fieldworkers who "believed they had observed events which could not be related to known physical processes" (p. 3). Of these thirteen, I examined three. In Ralph Linton's 1927 tale of Madagascar witchcraft I found not a single happening not easily explained on ordinary grounds, nor any anomalistic interpretation by Linton. The other two were *The Peyote Cult* and *They Shall Take Up Serpents*; when I put the question directly to author Weston La Barre, he answered as follows:

> I have never encountered in any of my fieldwork or any of my personal experiences any suggestion of support for beliefs such as psi, ESP, PK, precognition, or the rest . . . and I can only see as fatuous, incompetent, naive, or dishonest any finding in my writings that I support these fantasies.

Such discrepancies suggest Long may have mistaken descriptions of superstition for reports of anomalies.

Long credits the renowned anthrofantasist Carlos Castaneda with forcing anthropologists to pay attention to psi (pp. 1, 5, 13) but adds that a general occult trend helped to produce the don Juan books (p. 7). I suspect Castaneda's mounting novelistic occultism has turned more anthropologists away from psi than toward it. Various contributors make numerous respectful references to Castaneda's fabulous fieldwork as though it were authentic and factual. In their own defense it must be said that *Castaneda's Journey*, which let most of the air out of the don Juan hoax, was not published in time to prevent these undeserved bouquets from being sprinkled throughout *Extrasensory Ecology*, where they furnish comic relief.

Like my old army sergeant (first yuh tell em what yer gonna tell em, then yuh tell em, then yuh tell em what yuh tole em), Long writes both a foreword *and* an afterword to *each* contribution, even his own. This may sometimes help the reader, since Long occasionally obscures what the symposiast did say, and the

propinquity makes the contrast easier to see. Long says Bharati holds psi simply to be not believable (p. 51), but Bharati says some Zener card work points toward the occurrence of precognition (p. 17).

Feeling an aversion to statistical inference, Long not only belabors a strawman statistician but allows some very peculiar treatments into the book. One purported parapsychological experiment exhibits weak design, inappropriate data analysis, insupportable findings, and confused presentation. From this methodological and reportorial disaster Long blithely concludes that its "spectacular results strongly suggest that ESP and the spoken word act synergistically" (p. 140).

The data in a second experiment are said by Long to be unamenable to statistical testing. When I tested them statistically, I got a very significant result, from which (assuming there was no auditory information leak) I concluded as did the experimenter that "the eyes themselves are capable of directly communicating different emotional states to another individual" (p. 221)—a finding that will not surprise poets or lovers. The experimenter, however, goes on to "contend that this phenomenon is in some way related to psi phenomena" (p. 228), while Long declares that the data suggest eye contact enhances psi (p. 211). To me they suggest nothing of the kind, nor would they, I am confident, to J. B. Rhine.

Writing trite, sentimental, sophomoric educanese, one symposiast takes ten pages (pp. 144-153) to urge the invention of something he says already exists (pp. 150, 152)—teamwork to promote novel ideas.

On the positive side, the symposium brought together some very bright people intensely interested in anomalous events and their meaning for anthropology. After four oblique attempts, Long manages finally (pp. 372-388) to say directly what bearing all this has on his profession and how anthropologists can proceed in the field. The variety of the other contributions is worth reviewing.

Physicist Evan Harris Walker builds an ingenious bridge between micro and macro, quantum and PK, reconciling the paranormal with the physically normal and providing a theoretical platform for erstwhile skeptics to stand on while observing former miracles: Walker is a persuasive writer, and after he stops fooling around with Uri Geller and gets down to microbusiness his essay is a tour de force. In the same vein, mathematician Charles Musès theoretically connects matter and consciousness through "the inherent zero-point energy of the vacuum" (p. 361). How well these arguments will stand up to inspection by equally informed but oppositely inclined critics remains to be seen. Walker's influence on Long, however, cannot be doubted. Like the fictive skeptic/apprentice of the don Juan books, Long could not for a long time accept his own experience. "When I first witnessed what appeared to be 'the paranormal' in another culture . . . I remained a total skeptic. . . . I could not bring myself to seriously consider psi as a real possibility until 1973 when I discovered Dr. Walker's work and then presented my first paper on psi" (p. 53). Long hopes the presentation of a possible mechanism for psi will help anthropologists come to terms with the paranormal.

Engineer James B. Beal continues the normalizing of the paranormal by interpreting pre-earthquake sky glows, lunar influences, asthma, certain hallucina-

tions, visionary archetypes, human auras, dowsing, firewalking, and other oddities as natural effects produced by little-known but perfectly normal electromagnetic and electrostatic field actions.

Parapsychoanalyst Jule Eisenbud offers a theory of destructive PK arising from unconscious death wishes; as denials of such wishes inhibit social relations, so denials of their possible PK manifestations hinder scientific discovery. Psychologist Henry Reed describes a psychotherapeutic dream ceremony based on ethnographic models, in which some possibly telepathic communications occurred. Parapsychoanalyst Berthold Schwartz relates some entertaining anecdotes about supposed animal psi.

Intricately detailing a divining ceremony from Madagascar, anthropologists Robert and Linda Sussman illustrate one of the two camps I was talking about. The Sussmans are intelligent, informed, and presumably not generally gullible, yet they offer in evidence (p. 288) two instances of paranormal divining easily dismissed as normal inference or coincidence. Clearly they are starting from a set of epistemological assumptions unlike those of skeptics.

Three contributors discuss psychic archaeology, an instrumental use of psi which falls into two classes: (1) archaeological psychometry, or the divining of conditions or events associated in an earlier time with objects now recovered, and (2) archaeological dowsing, in which good spots for digging are psychically identified and detailed findings may be predicted. The first class is speculative and hard to test, but the second is subject to quick falsification or verification by digging in the chosen spot. Having dug in such a spot, Jeffrey Goodman offers some impressive confirmations, which may hardly be disregarded unless one judges them spurious.

Charles Musès describes the submission of terror-entranced householders to the bewitching thieves of ancient Mexico, an institutionalized hypothesis that illustrates how society's power wielders have perennially if unwittingly exploited the subtle functional relations among consciousness, body, and behavior.

Lucidly and forthrightly challenging positivists on the level of the philosophy of science, anthropologist Roger Wescott says: "It does not seem realistic to confuse the weak with the nonexistent or the intermittent with the non-occurrent" (p. 344). In passing, Wescott suggests what I think would be a good title for the whole area of paranormal studies: *anomalistics*. Instead of all these paradisciplines springing up like parascientific weeds, wouldn't it be better to talk about anomalistic anthropology, physics, or psychology? Instead of nomenclature that creates schismatic outgroups, wouldn't it be better to study anomalies within the established disciplines? Symposiast Margaret Mead makes somewhat the same point (p. 47).

Against the crowd of subscribers sat a lone dissenter, Syracuse University's redoubtable chairman of anthropology, Agehananda Bharati (before ordination as a Hindu monk, Leopold Fischer), who played the role of BS-baiter, castigating Castaneda and relegating parascience to the category of *emics* (roughly, folklore). Presumably looking straight at Jule Eisenbud, well-known chronicler of Ted Serios's PK "thoughtography," Bharati proclaimed: "I believe that PK, *all* of it, is fraudulent" (p. 17). No mean polemicist, Eisenbud retorted that Bharati's *etic*

(roughly, scientific) approach was *emetic*. When skeptics can't stand certain data, he said, "they puke; and it comes out as papers on the philosophy of science" (p. 22).

Overlooking such rowdiness and despite various shortcomings *Extrasensory Ecology* is a significant book that interestingly documents an important development: the birth of purposive, explicit, anomalistic anthropology. For better or worse, the newcomer is here, and will bear watching. ●

The UFO Enigma: The Definitive Explanation of the UFO Phenomenon. By Donald H. Menzel and Ernest H. Taves. Doubleday, Garden City, New York, 1977. 297 pp., $8.95.

Reviewed by Robert Sheaffer

In a field so dominated by the irrational as is that of UFOs, it is always refreshing to see the publication of a book which approaches the subject in a level-headed and suitably skeptical manner. The voices of the UFO-believers are heard, day in, day out, in the newspapers, in magazines, on radio and TV (especially on NBC!), but the voice of knowledgeable skeptics almost never reaches the public. *The UFO Enigma* will do as much as any book can to correct that imbalance.

It is sad that Dr. Menzel did not live to see publication of the book, for he would have enjoyed watching its shock waves reverberate throughout the UFO-believers' camp. This book should silence, once and for all, one of the noisiest pro-UFO claims that we ceaselessly hear: that even the ever-so-skeptical Condon Report, funded by the U.S. Air Force, was unable to explain away 40 percent of the cases they studied. Menzel and Taves examine each of these "unexplained" sightings one by one—which no UFO skeptic had previously done—and show them to be anything but impressive. It seems that Dr. Condon's investigators utilized a somewhat peculiar classification scheme: if a report was internally inconsistent, they called it "unexplained," since no object known to science has the remarkable property of self-inconsistency! Also dubbed "unexplained" are all UFO tales long on strangeness but short on evidence, because such reports, taken at face value, have no "explanation." The authors have done the world a great service by putting an end to this nonsense.

Both of the authors have professional skills which are of great value to researchers of UFOs. Dr. Menzel, one of the world's foremost astronomers, commits his formidable expertise to discussions of astronomical and meteorological phenomena, and radar. Dr. Taves, a leading psychoanalyst and one-time parapsychologist (indeed, the Taves-Murphy experiment of the 1930s ranks as a minor "classic" of parapsychology), turns his expertise to an analysis of the psychology and parapsychology of UFO reports. (Ask Uri Geller about the latter.) Under the chapter heading "The Liar, the Believer, and the New Nonsense," we find

nothing less that "a simplified taxonomy of lying," including Korsakoff's syndrome, the Ganser syndrome, defensive lies, compulsive lies: it's enough to make a UFO believer's hair curl. This chapter and others leave the reader with no illusions concerning the reliability of human eyewitness testimony.

Chapter 13, "UFO's and the Media," sums up and substantiates the authors' charges that "the media in general, and television in particular" have been "enormously irresponsible" in their coverage of UFOs. The next chapter demonstrates why it is true that "the convincing UFO photograph has yet to be taken." Chapters 3 through 6 place the UFO phenomenon in its proper historical perspective: our age is not the only one to envision fanciful sights in the heavens.

According to the title page, this book is certified to be "The Definitive Explanation of the UFO Phenomenon." That is one of the very few statements in the book that this reviewer does not find entirely convincing. For one thing, the authors do not appear to be fully conversant with the main body of present-day UFO literature. For example, discussing the supposed "fairy photographs" which bamboozled the celebrated Sir Arthur Conan Doyle in 1920, they ask, "Fairies! Who would believe in fairies today?" They seem unaware that UFO writers Jerome Clark and John Keel are both on record as accepting "fairy photographs" as presumably authentic, and that Jacques Vallee has written extensively on the importance of fairy sightings to the UFO phenomenon. Similarly, the authors repeatedly make reference to the "extraterrestrial hypothesis" as if it were the only option for those who reject the Baloney Hypothesis for UFOs. They again seem unaware that the "extraterrestrial hypothesis" is decidedly passé in many UFO believers' circles. Some of the more imaginative UFO hypotheses which are presently in vogue: "interpenetrating universes" (Hynek); a "control system" for mankind's destiny (Vallee); "psychokinetically generated by-products . . . quasi-physical" (Clark); the machinations of deceptive "ultraterrestrials" (Keel). The contemporary pro-UFO movement is a lot sillier than this book would suggest.

Because of the emphasis given to meteorological optics, some readers might conclude that, in general, "unexplained" UFO cases are ones which have not yet been investigated by someone familiar with mock suns and mirages. This emphasis is misleading because, while meteorological phenomena *do* give rise to a few UFO sightings, they are among the *least* frequent stimuli to such reports. But the authors make up for this by presenting excellent in-depth discussions of many of the factors that do often generate widely publicized UFO reports, especially hoaxes, meteors, and anomalous radar propagation.

The chapter on the celebrated "UFO abduction" of Betty and Barney Hill is good as far as it goes. The authors chose to concentrate on the famous Fish interpretation of the "alien star map" that Betty Hill reportedly saw aboard a UFO. They build up quite a score against it, but there are still a good many absurdities and arbitrary practices that they permit Fish and Hill to smuggle in unchallenged. The "random number" star map, in which the authors attempt to show that the alleged resemblance between the Hill sketch and the Fish stars could easily be due to chance, is correct in intention but its execution is not; Fish's star selection procedure is not duplicated correctly. (The Dickinson article in *Astronomy*, cited

as the source for Fish's map information, readily lends itself to this misinterpretation.) Fish did not arbitrarily select fifteen stars for the map, leaving thirty-one "favorable" but invisible stars embedded within, as the Dickinson piece implies. Instead, she included all the stars falling within a *subset* of the space containing the full forty-six; it is possible to enclose the fifteen Fish pattern stars inside a rectangular parallelepiped, leaving the rest of the forty-six stars outside. The UFO believers will no doubt delight in pointing out how much more restrictive the Fish approach is than the one used by Menzel and Taves. But no matter, for the map can be easily demolished by asking a few questions such as these: How did Fish sneak in the two stars that are *not* among the "favorable" forty-six? Why are the positions of the UFOnauts' "home base" stars so badly out of proportion and alignment? And why does she have them backwards?

The reader of this review must not permit my nit-picking to obscure the many virtues of the book. Because, "definitive" or not, *The UFO Enigma* is one of the most sensible books yet written on the subject of UFOs, casting a bright light in many areas where light is sorely needed. No one who is genuinely interested in the *facts* about UFOs can afford to be without it. ●

The Second Ring of Power. By Carlos Castaneda. Simon & Schuster, New York, 1977. 316 pp., $9.95.

Reviewed by Richard de Mille

This book, the *Library Journal* said, "raises the question whether Castaneda's journey should continue to be viewed as nonfiction" (Nov. 1, 1977, p. 2267). About time, I should think. Nonetheless, despite a year's warning from me, the Library of Congress goes right on classifying don Juan books as Yaqui history.

Elsewhere I have written at length about Castaneda, educator, allegorist, and recluse. Here I am still pursuing the hoaxer—or more accurately the former hoaxer—for Castaneda is now telling tales with such abandon that reasonable men (male or female) will not believe he is trying to deceive anyone. The time for deceit is past.

All the same, some are either still deceived or practicing deceit. One of Castaneda's UCLA professors recently repeated what he told me in 1975: that no deception occurred when faculty advised the University Press to publish *The Teachings of Don Juan* as though it were a factual report or when a doctoral committee accepted a dissertation in anthropology indistinguishable (except for a more scholarly title) from *Journey to Ixtlan*, already in the bookstores and widely hailed as fiction.

At any rate, we have before us now a fifth occult adventure from the irrepressible anthrofantasist. Resisting the temptation to tell you how much fun *The Second Ring of Power* is, I'll just tease out some signs of fictioneering—as if

we needed more.

Since I can't automatically reject paranormal claims as such, I'm not going to offer multifarious feats of sorcering as evidence of fabrication. A quite satisfactory, non-question-begging test is available: the test of internal consistency. *Castaneda's Journey* (reviewed in *Zetetic*, Vol. 1, No. 2) showed logical conflicts between Castaneda's University Press book and his double-duty dissertation, which compelled us to believe at least one of those works must be fiction. In the new book we find further contradictions of what has gone before.

Near the end of *Tales of Power* (p. 258) the fictive character Castaneda calls Carlos sees for the very first time don Genaro's spirit familiar, a strange tall man wearing pants that are too short. Two days later the story ends without any reappearance of this "ally." *Second Ring of Power* assures us Carlos has not seen don Juan or don Genaro in the meantime (p. 7) but incongruously asserts that he has seen that same ally "a great many times while in the company of don Juan and don Genaro" (p. 140). This disparity between *one* supernatural sighting and *a great many* sightings is an unmistakable flaw in a supposedly factual scheme.

Second Ring also surprises us with the news that during the period of *The Teachings* and *Ixtlan* (narrative 1960-65) don Juan had taught Carlos "a system of covert communication through some coded movements of the feet" (p.74). Carlos recalls with amusement how don Juan gave him the foot sign for "horrible" when don Genaro first approached. Oddly unconcerned, however, Carlos "had not really looked at [don Genaro] at that time except in a glancing fashion" (*A Separate Reality*, Pocket Book edition, p. 93), nor was there any suggestion of apprehensiveness during that "most unobtrusive and casual meeting" (*Tales of Power*, p. 187): a remarkable insensitivity to something "horrible" in an often and easily frightened sorcerer's apprentice. Even harder to swallow is the bland assertion that Carlos learned foot signaling during the "countless times" he had roamed with don Juan, while author Castaneda failed ever to mention it in four books detailing every twitch and quirk of Carlos's fascinating teacher.

These contradictions are not careless mistakes by a hoaxer who wishes to deceive us but creative revisions by a storyteller who wishes to entertain us. I call them Originating Flashbacks. To be guiled by such transparent literary devices is to be a dedicated gull.

Skilled at persuasion, Castaneda deliberately immunizes the reader against doubt. A large dog supposedly climbs over the front seat of Carlos's car to sit in the back seat—but then is somehow too big to climb out again (pp. 27-28).

"Aha!" yelps the would-be literary detective, "I've got the faker this time! That dog has changed size!" But not so fast. The wily doctor gives us the slip again. Presently we learn the witch Soledad had *pushed* the poor beast into the back seat "making him yell with pain" (p. 66). Such tricks anesthetize the critical faculties of all but the most determined skeptic.

Yielding to no man in determined skepticism, I note with raised eyebrow that Carlos opens the trunk of his car (p. 23) at a moment when the keys are still in the ignition (p. 24). Having said so, I confidently await *The Third Ring of Power*, wherein Castaneda will identify Carlos's car as a model with lockless trunk or casually recall one hilarious day when Juan burned out the tumblers with a

stupendous look.

Such rebuttals are characteristic. Critics have long complained about Carlos's womanlessness. Now he surrounds himself with gorgeous witches, frequently naked ladies whose miracles of levitation and materialization flow most copiously during menstruation. Well, why not? If retitled interviews with imaginary Indians merit doctorates in scientific cultural anthropology, what dialogical maneuvers are forbidden? ●

The 12th Planet. Zecharia Sitchin. Stein and Day, New York, 1976. 384 pp., $12.95.

Reviewed by James E. Oberg

This book is supposed to be a man's life's work which tells "where, when, how, and why astronauts from another planet settled the earth and created Homo Sapiens" (book dust jacket). A careful reading of the evidence leads one to the temptation to snigger, if not laugh out loud. But the image of an old man stooped over dusty manuscripts every moment of his spare time, for decade after decade, while wars rage outside his doors, and finally, triumphantly, producing this book, transforms any thought of graceless humor into pathos and tragedy.

If this is a life's work, what a terribly wasted life!

It would hardly have been worth even a book review, and I felt the effort would have been better placed elsewhere. Then "noted UFO historian" Lucius Farish endorsed the book warmly, so I felt like examining Farish's standards as well as Sitchin's logic.

Lucius Farish does have standards for UFO books. Admittedly, they are about as high as those the draft board would have if the Russians were advancing through Missouri, but they do exist. And Sitchin's book passes, with flying saucers—oops, I mean, flying colors.

Realistically, *12th Planet* is an astronomical flop. The author attempted to combine planetary astronomy with Sumerian archaeology to prove the existence of the Nefilim, the inhabitants of a distant alien planet in our solar system who founded earth's civilizations. Mysteries and uncertainties in archaeology and anthropology are milked for all they are worth.

It is an old story, and we've seen dozens of such explanations over the past few years, each one based on exhaustive (and for the careful reader, exhausting) research, and obviously at least all but one of the conflicting "ancient astronauts" theories are completely wrong. Those are not good odds to wager a lifetime on.

Sitchin's grasp of Near Eastern archaeology is excellent, and his introductory chapters are written in a clear, readable, pleasant style. I would recommend them to anybody interested in a survey of that field, and in testimony to the debt

civilization owes to ancient Sumerian culture. The first third of the book testifies to the fact that Sitchin *could* do his homework, and present it to readers creditably.

But halfway through the book, Sitchin unveils his master plan. Slowly and subtly he assigns modern space and rocket terminology to obscure and ambiguous Sumerian words and glyphs, and he makes juxtapositions of modern space images with mysterious and symbolic Sumerian artwork. And then, lo and behold! He has "discovered" some ancient astronauts.

"Can there be any doubt that the ancient people, in calling their deities 'Gods of heaven and earth,' meant quite literally that they were people from elsewhere who had come to earth from the heavens?" Sitchin asks enthusiastically. But who today, their own enthusiasms and credulities intellectually brutalized by the past decade's "ancient astronaut" showmanship, charlatanism, and downright silliness, who of us can answer "No, no doubt" without at least a twinge of uneasiness?

At this point Sitchin launches himself into astronomy—and here his mission is aborted. Gone is the expertise and familiarity, replaced by scientific gaffes and trivial errors. The Sitchin theory must rest on two legs, archaeology and astronomy—the archaeology leg is dubious, and the astronomical one is nonexistent. Tim-ber-r-r-r, as the lumberjacks used to say in similar situations.

Sitchin grossly overestimates the entirely admirable astronomy of the Sumerians, in order to require the action of a superhuman intelligence. On page 171 he insists that the knowledge of the retrograde motions of planets requires advanced technology and "very long periods of observation." In actual fact, it is one of the most obvious phenomena of the sky and can be detected in a matter of months. Or on page 175, he marvels that the Sumerians knew of "all the constellations in the northern sky," including many not discovered and recognized until the twentieth century. In actual fact, there is nothing surprising in any culture "recognizing" as many or as few constellations as they have patience to plot out.

That is Sitchin's thrust: "It is evident that the Sumerian astronomers possessed knowledge that they could not possibly have acquired on their own."

We have seen this trick before, sadly. Omohundro called it the "our-ancestors-the-dummies" gambit. It is a trick, perhaps not a conscious one, but a phony one all the same.

The Sumerians needed no help to know the astronomy they possessed. All they needed was curiosity, accurate records, and normal human intelligence. They didn't need a cosmic crib sheet, sneaked to them by some interplanetary Cliff's Notes, Inc.

And Sitchin doesn't know modern astronomy, either. The key to his solar system shenanigans is "Phaeton," the planet that "exploded" between Mars and Jupiter. "Astronomers are certain that such a planet existed," Sitchin says, and he is pitifully wrong. "Beyond any doubt, this is the debris of a planet that had shattered to pieces," Sitchin pontificates, and he is so wrong that I refuse to waste any further pity on his "life's work" as he makes a fool out of himself on every page. (The "exploded planet" hypothesis used to be *one* of many possibilities for

the asteroid belt, but in recent years it has been abandoned by astronomers.)

Sitchin takes a Sumerian sketch of a group of circles, and turns it into a map of the solar system (well, it will work, if you pick the one drawing out of dozens of available sketches, just so long as it fits what you intend to make it fit). Sitchin takes a Sumerian creation myth, replaces gods and goddesses with planets, and recreates a cosmic cataclysm to warm a Velikovskian heart (that's right—the gods and goddesses are astronauts when it will fit, and also are planets, elsewhere, if it will fit there, too). "The puzzles of our solar system . . . all are perfectly answered by the Mesopotamian creation epic, as deciphered by us," he claims, solving the mysteries of the ages in one swoop.

Okay, so he's careless, too. He doesn't know an apogee from an aphelion (if you claim to be an expert, you'd better know the difference). He doesn't know how a "hothouse effect" (he probably means "greenhouse effect") works, even as he must conjure it up to explain how he can have the habitable warm planet of the mythological Nefilim astronaut gods circling the sun way out beyond Pluto. By page 231 he switches his soaring blunders to biochemistry and the origin of life—and pounds the nails into the coffin containing the dead remains of his credibility.

Sitchin returns to ancient mythology again, and spins a tale of extraterrestrial treachery and defeat. But it is too late for fables. A reader who refuses to be bludgeoned into agreement by the monotonous recitation of "fitting" mythological passages, already dizzy from Sitchin's counterfeit "twelfth planet," just will not stand for the sleight of hand required to make the amorphous Sumerian myths "fit" the tale Sitchin strives to tell.

There is no "twelfth planet" a la Sitchin, whatever stony or frozen methane objects may lie hiding in the transplutonian darkness. Sitchin's planet is a figment of a lifetime poring over the ancient myths, and perhaps an afternoon or two skimming astronomical textbooks. I am sorry Sitchin spent so much of his life that way, and I'm sorry if anybody else is tempted into following the same wasteful dead-ended detour. Wading through the book seemed to take me a lifetime, too, and it was just as fruitless. ●

Traite d'Astrobiologie. K. E. Krafft. A. Legrand, Paris, 1939.

Astrogenetics. Edmund Van Deusen. Doubleday, New York, 1976.

Reviewed by Michel Gauquelin
(Translation by Ron Westrum)

Since the publication of "Objections to Astrology" in *The Humanist* (Bok et al., 1976), there has been a renewed interest in what has been referred to as "statistical astrology," the correlation of astronomical events and human events. It is important to emphasize, however, that doing research in this area involves

the three fields of astronomy, statistics, and demography, and an insufficient grasp of any one of these fields is likely to lead to studies of little value. These two books demonstrate the pitfalls that await the unwary in statistical astrology. I hope the mistakes I am about to expose will serve as a warning both to those who read such studies and to those who wish to conduct them.

The Critique of Krafft

K. E. Krafft's *Treatise on Astrobiology*, published in 1939, is an enormous volume in which Krafft assembled all his work as a statistical astrologer. Unfortunately, the work is badly organized and forms the most indecipherable mass one could imagine. It has no overall plan; Krafft simply placed his articles in the order in which they were written. He therefore often passes from apples to oranges and then returns to the same questions later in the book. Even worse, he never gives the raw data which he uses to support his arguments, but instead uses "suggestive" graphs. Thanks to these graphs, Krafft has a ready ability for making statistics show what they do not show at all. No doubt his aim was to use attractive graphs in more-or-less ordered form to drown the actual statistics in a confusing series of non sequiturs, encouraging his readers to accept arguments that were really very bad. This is undoubtedly one of the reasons for his success in the astrological community. The unwary, convinced in advance, would only pay attention to the "graphs" and the conclusions. The really critical part, the argumentation, would escape them completely, for few would take the trouble to read the book carefully. And even fewer would have the training in statistics which would enable them to detect the fallacies.

It is easy to see that Krafft, like others, believed he knew the answers in advance of any research. He performed his statistical calculations only to give a spurious appearance of solidity to his beliefs. His first studies reveal this tendency very well: they do not concern statistics, but are merely "suggestive examples." Yet it is from these very examples that Krafft derives his three fundamental laws corresponding to the three classical rules of astrology: the influence of the stars on heredity, psychology, and physiology. He thus extends *a priori* the influence of the stars over all the spheres of human life.

The critique of such a lengthy and disorganized work can be presented here only in an abbreviated form. Readers who wish a more detailed critique should consult Gauquelin (Gauquelin, 1955: pp. 38-57). We will take three examples from Krafft, one from each of his three areas, to demonstrate Krafft's use of scientific reasoning and statistics. These examples will show how what might seem to be very impressive astrological influences in Krafft's book can often in fact be reduced to Krafft's misunderstanding of his own statistics.

First Example: Astral Psychology

"Cosmic Influences on Psychology and the Temperament" (pages 22 to 28).

1. "The Frequency of the ecliptic positions of the Sun for the birth of 2,817 musicians." Krafft presents the figures by the various positions of the sun along

the ecliptic and concludes that certain positions "are more favorable than others to the musical temperament." Unfortunately the author does not notice that, the mean being small (2,817 divided by 360 = 8 musicians for each degree of the ecliptic), the distribution obeys Poisson's curve. Calculation shows that the figures cited by Krafft exactly follow the curve for the Poisson distribution. In other words, it is very likely that they are due to chance.

Krafft then groups his musicians by 5-degree ensembles and declares anew that there are favorable and unfavorable positions of the sun for musicians being born. This, however, is false. As the astronomer Paul Couderc has noted elsewhere, "Chance alone would allow one, with a probability of ⅓, to find in this case groups of musicians larger than 58 or smaller than 22; however, neither of these perfectly acceptable results occurs." (Couderc, 1951, pp. 86 et seq.)

2. "Frequency of ecliptic positions of the Sun relative to the birth of 156 painters." With a ridiculously small sample, Krafft draws grotesque conclusions.

3. "Frequency of the angles between the Moon and Uranus and the births of 2,567 musicians." Krafft informs us neither why these particular angles have been chosen nor why the number of musicians in the sample has changed. Yet in his figures Krafft finds "deficits," "compensations of frequencies," "affinities," and "symmetries" which in Krafft's opinion render the figures remarkable. But one has only to look at the graph to see that the distribution is quite normal and what one would expect by chance.

Second Example: Influence of the Stars on Physiology

"Distribution of the frequency of 1,300 inter-radical-transit angles corresponding to the onset of 23 cases of kidney stones" (p. 152 and 156). (Note: In astrology a "transit" is the passage of a celestial body during its course on a "sensible" point of the the natal birth chart.) Here what is in question is the relation between the time of birth and the time of the onset of sickness. Krafft posits anew a close relation between the stars and human biology: "The onset of stones does not take place beneath just any sky," he writes on page 155.

Without quarreling with the basis and conditions of the material used in the study (the very short time—the onsets all took place within a two-month period—and the difficulty of verifying this somewhat bizarre material), one can ask why Krafft did not try this study on the cases of death instead of mere sickness. Surely what would be important for the former would be even more important for the latter?

The graph Krafft uses for evidence is revealing, and one quickly finds out why. Krafft writes on page 152: "In order to facilitate the analysis, the fluctuations have been given in relation to a 'floating mean,' corresponding to the general tendency or rather to the general deformations of the original polygon." It would be hard to find a more ingenuous admission that one has fudged one's figures. One does not have to look any further after such a statement, and the results cited by Krafft are worthless. (Let it be noted nonetheless that he manages to commit an error in the calculation of the probability of a coefficient of correlation.)

Third Example: Astral Heredity

"Study of the effect of heredity on the date of birth" (pp. 103-107). In this case Krafft has used the dates of birth of the members of 52 families to show that the date of birth is to some degree (!) hereditary. He indicates neither the place nor the period from which these families were taken.

Krafft establishes 7,481 comparisons of dates of birth between the members of these families, comparisons which he groups into 5 columns according to the closeness of the relation, but only shows those in which the result is within ± 20 days. We can make two observations about this study.

First, Krafft shows a complete ignorance of the Poisson distribution; having to allocate 2,729 comparisons to 365 days (with a mean of about 7.5 per day), he thinks that a day which contains 15 comparisons shows beyond a doubt that heredity influences the date of birth. Actually, it would be quite normal to find such a figure purely by chance in such a case.

Second, without going into the different arrangements which Krafft has used to present his results, consider only the last column. It is the sum of the other five and is felt by Krafft to have the greatest probative value. He writes (on p. 105), comparing date of birth between members of these families, "In applying, for example, to the interval ± 5 days (giving 11 days in all), the test for probable departure, we find this surpassed exactly eight times; which makes the probability that this could arrive by chance, for the relevant matchings, one in 15 million, practically zero!"

But let us see what happens when we compute our own calculations with Krafft's figures.

The total number of comparisons of date of birth between members of these families is 7,481. Eleven days represent roughly $365/11 = 1/33$rd of the year.

The mean is thus $7,481/33 = 227$, with a standard deviation of about 15.

For the eleven-day period considered so significant by Krafft, he found 265 similarities of date of birth among members of his families.

The calculation of the critical ratio (CR) gives:

$$\frac{265 - 227}{15} = 2.53$$

This value is marginally significant at the 0.01 level; in other words, the odds are approximately a hundred to one against this happening by chance. But this finding is *ex post facto*; Krafft had no special reason before his test to believe that *this* particular period of eleven days would be significant. As an eleven-day period represents 1/33rd of the year, the same result might take place in any of the other 32 sectors of eleven days as well. One has to take account of this fact in the estimation of the probability published by Krafft. Actually, the 33 sectors of eleven days are equivalent to 33 tries to reach the probability found for only one of them. It would be perfectly normal with 33 sectors to find one of them which marginally reaches the probability level of 0.01. We are thus very far from the

incredible degree of improbability posited by Krafft, derived God knows how, and followed by an exclamation point.

Finally, on page 107, Krafft furnishes a graph in which all the distances between dates of birth are (this time) represented. The graph includes 3,350 comparisons without any indication of their sources. One does not know whether this is an extract from the previous table or from another. In any case it is in flagrant contradiction with everything Krafft had previously proposed: here there are no deviations from expectation, and the distribution is absolutely what one would expect by chance. The so-called "findings" of the previous table do not appear.

This rather unremarkable distribution does not prevent Krafft from writing: "Consider the piling up of cases around 13, 58, 250, and 341, visibly preferred (!) in comparison with the deficits around 120, 165, 272."[1]

These three examples give one some idea of the ruses employed by Krafft to prove the influence of the stars on human life. We could easily indicate other examples of ignorance, incoherence, and distorted results in his book. But in spite of his sloppy procedures, which are off-putting enough, none of his pretended results amount to anything. The net implication of the book for the effects of the stars on human life are that such effects do not exist. Krafft's attempts to demonstrate cosmic influences on humanity took place at a time when few studies in statistical astrology had been carried out. This excuse is no longer available to the second author we will examine.

The Critique of Van Deusen

Edmund Van Deusen claims in his book that astrology has been empirically demonstrated. Van Deusen's book is one of the most recent attempts to prove the influence of the signs of the zodiac on our lives. The author has taken, from biographical dictionaries of the *Who's Who* type, the dates of birth of thousands of persons belonging to several occupational groups. Having noted the position of the sun corresponding to these births in the twelve signs, he claims to have obtained results which amply justify astrological tradition. He then puts forward a hypothesis to explain these results and justify the title of the book.

This attempt by Van Deusen to support astrology is not original and one regrets that his work does not contain a bibliography on the subject, for literature on it is abundant. First of all, there are astrologers who have endeavored to prove the influence of the signs of the zodiac by utilizing the same approach as the author. Their results have been overturned by scientists who have checked their studies. But there are also nonastrologer researchers: psychologists, sociologists, physicians, and demographers, who have tried to see if there is any possible relation between the season of birth and certain mental and physical characteristics of individuals.[2] The pioneer in this area was unquestionably Ellsworth Huntington, who in 1938 published his classic *Season of Birth, Its Relation to Human Abilities.* One does not forget that "season of birth and personality" is hardly the same thing as "zodiac and personality": of course, the probability of the presence of the sun in the different zodiacal signs could only be the consequence of the rhythm of the seasons, so it is always difficult to disentangle what is due to

simple seasonal factors and what is due to the astrological influence of the twelve signs.

We will assume that he has carried out this work objectively, and correctly computed his calculations of the date of birth and the position of the sun in zodiacal signs. Nonetheless, it is important to ask three questions of his study: (1) Are the results in accord with astrological tradition? (2) Are they significantly different from chance? (3) Are they replicable by other researchers?

Do the Results Agree with Astrology?

Van Deusen states that his results are *always* in accord with astrological tradition. Nonetheless, some astrologers I know were greatly surprised and even disappointed because they would have been unable to predict them! In reality, as chance would have it, certain results support the tradition while others are in contradiction to it. Such is, for example, the case with the first sign of the zodiac, Aries. The children born under Aries, the author tells us, are "pioneering, courageous, direct in approach, highly energetic . . . pugnacious, quick-tempered," which can be juxtaposed with the statement elsewhere in the book that "only people with aggressive, competitive personalities would normally be attracted to professional sports." One would therefore expect that athletes would be born more frequently under Aries than under the other signs. But Van Deusen finds just the opposite. Among 4,006 college athletes, Aries is "the lowest sign of the zodiac." Aries is also "below average" for 8,024 professional baseball players. After the fact, Van Deusen explains this very well: "To top it off, Arians are the worst 'losers' in the zodiac." (!) With this same curious logic, the author accepts, without batting an eyelash, that "the highest month for Baseball Players" is found in Libra, a "venusian" sign which he nonetheless describes as a "charming, idealistic, romantic, indecisive sign."

But let us not tarry too long over these contradictions, which sometimes seem to bring the author to a veritable distortion of astrological tradition for which even astrologers themselves might reproach him.

Are the Results Statistically Significant?

In spite of everything, certain of Van Deusen's results don't seem as if they could be explained by chance. One has the impression that "there really *is* something here." But what in fact is it? Are the solar distributions of Van Deusen really indicative of a zodiacal influence on the groups in question? One wonders if the author was able to resolve the very delicate but fundamental problem of what the theoretical frequencies should be. The probability of a solar distribution for a given group has no value unless the raw data for that group are compared with a correctly chosen model distribution. Unhappily, Van Deusen used a single and probably nonstandard model distribution for comparing with all the groups: the monthly distribution of births for 472,403 California drivers. This is a serious mistake, for the demographic origins of the occupational groups of the author sometimes differ considerably from those of the Californian model by period,

region, and sociocultural level, and demographers have shown that the seasonal distribution of births varies in relation to these factors.

In the book already cited, Huntington used nearly a hundred pages to show how to avoid what he referred to as "statistical errors" in this area. He published some striking examples of the evolution of the seasonal curve of births, which can sometimes result in the complete reversal of a statistical tendency. In Massachusetts the maximum number of births around 1870 fell between October and December; around 1930 this period registered a minimum of births. In Michigan the important minimum number of births registered a century ago in January/February disappeared completely around 1930. Around 1920 there was a maximum of births in spring in the northern United States, in Maine and Minnesota, although in the South, in Florida, spring was the season of minimum births. In the same year the maximum for Kentucky fell during winter, and New York State had two maxima, one at the end of winter, the other in summer. Cultural habits, the fact of living in the city or the country, and economic differences thus conspire to modify the seasonal pattern of births.[3]

So far as the results of Van Deusen are significant, their origin appears to be demographic rather than astrologic. Many of his curves present, nonetheless, the appearance of a sinusoidal wave typical of a purely seasonal effect. Thus, the distribution of his 7,118 advertising executives (maximum in summer, minimum in winter) is very similar to that of his 8,762 clergymen. The author justifies his astrological interpretation of this resemblance by stating that "like advertising executives, the clergyman has something to sell." This is not serious reasoning. Nor is it sensible to use the distribution of months of birth of California drivers of today to calculate the theoretical frequencies in zodiacal signs for 2,931 authors from the sixteenth through the twentieth centuries, born not only in the United States but also in England, Canada, even in Australia and New Zealand! Similarly the comparison of California drivers with 4,985 United States congressmen from the eighteenth to the twentieth century leaves much to be desired.

Are the Results Replicable?

Van Deusen writes that "the ultimate test of any scientific concept is whether 'reproducible results' can be obtained by separate investigators." Reproducibility would be important even if the study did not result from astrological assumptions. But it is regrettable that Van Deusen has shown no interest in comparing his results with those of his predecessors in this line of research. There is an exception: he cites the statistics of K. E. Krafft on musicians and indicates that there is a remarkable accord between Krafft's figures and those he observed for other musicians. I have studied Krafft's statistics in considerable detail and there is no particular resemblance between them and those of Van Deusen. Krafft's curve for musicians is characterized by a maximum of births in Taurus, a sign which is "below average" in Van Deusen's statistics.

But let us suggest to the author a complete comparison between his results and those I have obtained for the same occupational groups not so many years ago. Since in 1970, my laboratory published, in six volumes, all the names and

dates of birth of the subjects in my groups, this document can constitute an objective ensemble for comparison.[4] Table 1 gives the actual and expected frequencies we found for each of the ten occupations we studied. Let me note in passing that our results were not in accord with what astrological tradition would predict. For example, the dynamic and aggressive Aries is *very* poorly represented in the groups of athletes and military officers, although it is at a maximum among the artists, painters, and musicians. But let us return to the comparison with the observations of Van Deusen. Except for the military officers (which he did not study), one can compare his observations with my own for the nine other groups. This comparison leaves no doubt: there is no resemblance between Van Deusen's results and my own. In some cases our results were opposite.[5]

The first group Van Deusen cites in his book is journalists (p. 29). In this group the lowest sign is Capricorn (19% below average value). "Journalism is an unattractive profession for Capricorn," the author explains, because "Capricorns are not communicators." If one looks at table 1, one sees that the results for my group of journalists has Capricorn "by chance" the highest sign above average value.

The second case published by Van Deusen for which a comparison with my data is possible concerns authors. Van Deusen finds a maximum of births in Virgo, although in my group the maximum is in Pisces, a sign which is clearly below average in Van Deusen's statistics.

And so on. A detailed confrontation would be too long for this article. One should note that there are some convergences as well. But divergences and convergences appear to occur totally by chance.

Congenital Effects vs. Astrogenetics

The results published by Van Deusen do not support astrological tradition: they are only significant to the degree that the author has not succeeded in correctly calculating the seasonal demographic frequencies. Finally, they are not reproducible.

Must one, after all this, rebut the author's theory that explains his results and justifies his title? That there exists a relationship between the season of birth and human aptitudes, as Huntington considered, is not impossible, even though the proofs produced in evidence by researchers have remained controversial. But it is not necessary to add to this hypothesis, as Van Deusen does, astrological influences from the zodiacal sign at the time of birth. The title of his book is badly chosen. If a relationship between human characteristics and the month of birth exists, this would be a consequence of the season on the fetus in the mother's womb, an influence which would be exercised through the physiological state of the mother during gestation. This is the idea most often advanced by researchers. It would involve a *congenital* effect and not a *genetic* one, in accordance with Webster's definition of "congenital" as "resulting from or developing during one's prenatal environment." A possible influence of the season of birth does not imply a genetic modification or the intervention of the stars. The title of Van Deusen's book would better have been something like: "Season of Birth and

TABLE I

Actual and expected frequencies of the Sun in the Zodiac at the birth of professional notabilities

		Ari	Tau	Gem	Can	Leo	Vir	Lib	Sco	Sag	Cap	Aqu	Pis	N
Athletes	Act	154	159	178	194	157	159	182	148	154	195	196	212	2088
	Exp	184	179	173	172	172	172	168	164	161	173	184	186	2088
Physicians	Act	225	221	200	220	219	217	203	195	189	218	207	238	2552
	Exp	224	219	213	212	212	215	207	200	198	207	220	225	2552
Scientists	Act	93	84	109	97	80	91	103	71	65	97	101	104	1095
	Exp	96	94	91	90	91	92	89	86	84	89	95	98	1095
Soldiers	Act	225	289	245	226	281	268	235	252	246	259	247	273	3046
	Exp	268	261	252	251	252	255	248	240	236	248	265	270	3046
Painters	Act	144	130	124	138	121	94	137	101	110	107	125	142	1473
	Exp	131	127	124	123	122	122	118	116	113	118	128	131	1473
Musicians	Act	90	68	86	73	69	68	61	64	68	71	75	73	866
	Exp	78	75	73	73	72	71	69	67	67	69	75	77	866
Actors	Act	118	143	112	138	127	115	116	88	112	110	108	122	1409
	Exp	124	121	117	117	117	118	114	111	109	114	122	125	1409
Politicians	Act	87	72	97	75	87	89	104	61	79	82	97	73	1003
	Exp	87	86	83	83	83	84	82	79	77	82	88	89	1003
Writers	Act	110	121	113	113	99	120	95	111	106	107	125	132	1352
	Exp	120	117	112	112	111	112	109	106	105	110	118	120	1352
Journalists	Act	40	48	55	54	54	61	69	54	52	71	57	61	676
	Exp	59	57	55	54	55	57	56	54	52	56	60	61	676

(data from: Gauquelin *Statistics on Zodiacal Influences*, L.E.R.R.C.P., Paris, 1978)

Congenital Process" rather than "Astro-Genetics," even though the latter is more romantic. The author might be justified in using the prefix "astro" if he observed the positive results for all other astrological factors (ascendant, the Moon, planets) except solar position, which of course is the cause of the seasons. But he does not consider any of these factors.[6]

A final remark: A purely genetic influence of the zodiac could be envisaged if one were to observe a hereditary tendency for children to be born under the same zodiacal sign as that of their parents, as Krafft claimed in his *Traite d'Astro-biologie*. I have completed such an experiment with more than 3,000 parent-child pairs and no true "astro-genetic" effect appeared.[7]

In conclusion, Van Deusen's *Astro-Genetics* brings nothing of positive significance to the support of astrology. Nonetheless, it is to be hoped that, to the degree that the author has been able to assemble correctly his data of birth, his work will not be entirely wasted. It could be used by sociologists and psychologists who desire to explain scientifically the differences registered from one group to another and from one study to another.

Summary

To summarize our critique of the two works in a few words: Statistical astrology, while seemingly a rather straightforward enterprise, in fact requires considerable finesse. A thorough knowledge of statistics, extensive reading of the previous literature, and some sophistication in demography and astronomy are necessary if one's results are going to have any real value. As our examination of Krafft and Van Deusen shows, the lack of these competences can cause serious problems. It is to be hoped that future researchers will take these lessons to heart and avoid falling into the same traps.

Notes

1. This rather reminds one of the Bufferin commercial, where the announcer says, "While the curves show no significant statistical difference, still Bufferin comes out ahead."—Translator.

2. I have summarized some of this work in chapter 10 of Gauquelin (1967).

3. At the end of the last century in France, the maximum number of births fell in January/February/March; in 1950 the maximum fell in May/June. It is because French society has evolved that there are born in France more little Tauruses and Geminis than previously. One hundred years ago France was a rural country and there were no vacations. Now the French live together in cities and everyone leaves for vacations in July and August; which causes a maximum of conceptions in those months and consequently a maximum of births nine months later, in May and June. One can thus understand the possible error of "astrological" interpretation if one uses a curve of births from 1950 to serve as a basis of comparison for a group of distinguished professionals born arund the turn of the century.

4. See Gauquelin and Gauquelin (1970-1971).

5. I would like to thank Mr. Van Deusen for having communicated to me the raw data of his observations, which has permitted me to compute coefficients of correlation between his data and my own. In his book he only published his observations in percentages more or less than the mean, which does not permit one to utilize the usual statistical tests with any precision. On my part, to return this courtesy, I wrote Van Deusen a letter on April 10, 1977, indicating to him my reservations about his book. But he has not responded to my letter.

6. We have calculated the zodiacal distribution of the ascendant point (so important to astrologers) of the moon and the planets for our professional groups, but none of the results were favorable to traditional astrology. (Gauquelin, 1955)

7. This experiment was published in 1962 in French (Gauquelin, 1962). A brief summary will be found in the section "These Roulette Wheels Are Not Hereditary" of Gauquelin (1973), pp. 249-252.

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From the Editor

With this issue, our fourth, the name of *The Zetetic* becomes *The Skeptical Inquirer* and we complete our second year of publication. In the past year, the work of this journal and of its parent Committee for the Scientific Investigation of Claims of the Paranormal has become increasingly visible. Our circulation, though still small, has nearly doubled. We consider our efforts to be in the interest of both science and the public, and hope you will continue to help spread word of them.

We have made some minor changes in our format to bring you more timely and readable information, but our purpose remains the same: to publish accurate and reliable information that analyzes, from a critical, scientific point of view, claims of paranormal phenomena. Some of these efforts are in the form of scientific reports of original research by qualified investigators. Other articles, and also book reviews, analyze and critique claims of the paranormal, drawing upon the authors' knowledge and expertise to try to sort fact from fiction and place in accurate perspective the claims being addressed. News articles report on activities and research findings round the world concerning attempts to critically analyze claims of the paranormal.

We hold firmly to the principles enunciated in our first two issues. Among them are: (1) in this area, as in all of science, extraordinary

claims require extraordinary proof, and (2) the burden of proof rests with the claimant, not the critic. Another principle is that open-minded skepticism is the *proper* scientific approach (not an *extreme* approach) to claims of the paranormal. The skeptical attitude to which we adhere is, for reasons described well in earlier issues, fundamental in the response of science to all claimed anomalies (not just to the "paranormal"). It should not be confused with bias. Science is a dynamic, self-correcting process, not a body of accepted knowledge. We are open to all new facts.

Our emphasis is on empirical, scientifically testable claims. Mystical claims whose basis primarily is belief lie outside our province.

We are committed to a scientific perspective. We do part company with those colleagues in the scientific community who believe it best to totally ignore claims of paranormal happenings. Some claims deserve scientific scrutiny on their positive merits. With other claims, some of them widely publicized, to disavow any responsibility to respond to them scientifically would be to leave the often overcredulous public without accurate facts at their disposal to assess their invalidity.

Our tone is sometimes less than solemn, but our intent is serious: to provide a forum for publication of research findings and critiques by investigators critically analyzing claims of the paranormal and to provide to the public a continuing source of reliable information by which they may more accurately form their own judgments. We welcome all those who would join in that quest.

—Kendrick Frazier

From the Chairman

The Committee for the Scientific Investigation of Claims of the Paranormal has come a long way since its establishment two years ago. When we held our first organizational meeting at the State University of New York at Buffalo on April 30, 1976, little did we imagine the tremendous enthusiasm that the Committee's formation would arouse among scientists and scholars, members of the media, and the general public. We have received thousands of letters, an overwhelming number supporting our efforts. Virtually every newspaper in the United States has reported our

activities, in some cases more than once. Members of our Committee have appeared on hundreds of radio and television programs. Countless magazines have commented on our activities, and the interest has been worldwide, from Brazil and Mexico, to India, the Soviet Union, Africa, and Western Europe.

I am pleased to report that CBS, ABC, and the Educational Television Network have all produced programs that have presented our viewpoint to the public—though we believe that much more still has to be done in this area. Major publications in the United States and abroad—*Time,* the *New York Times*, the *Washington Post*, the *London Times*, the *Chicago Tribune*, the *Los Angeles Times*, the Associated Press, and others—have generally commented favorably on our position.

At the same time we note with interest the increasing number of claims of the paranormal appearing in the media and the evident public fascination with all things paranormal. We are dismayed that most of these claims go unchallenged and that many movie producers, book publishers, and publishers of magazines and newspapers still sensationalize them. Of course, publications committed to belief in the paranormal—magazines such as *Fate*, *New Realities*, and the *Journal of the American Society for Psychic Research*—have raised serious criticism of our position, especially of what they view as our "lack of objectivity."

Our Committee has been steeped in controversy from its inception. We need to reiterate that we are interested not in "debunking" the paranormal, but in making available careful, dispassionate, scientific appraisals of such claims. Our running controversy with NBC addresses this point. Obviously, people have a right to publish or produce whatever they wish, but we are asking for balanced treatment and the opportunity for the public to hear the dissenting scientific viewpoint.

Our Committee is still comparatively small—especially in view of the many requests made upon us for information and as a resource. In order to meet this need we recently established a panel of "scientific consultants," whose expertise we can call upon to assist us in specialized areas. The names of these consultants are listed on page 144. In addition, we have established facilities at the State University of New York at Buffalo to test some of the claims that have been made. Among the projects we have been engaged in is a test of the Gauquelins' hypothesis that there is a correlation between the position of Mars and the birth of sports champions—including both the Zelen Test of European data and a new United States study. We also have tested alleged psychics, such as Suzie

Cottrell, Michael Moffa, Wendy Steinberg, and others, in Buffalo, Jean Girard in France, and Judy Knowles in England. We hope to continue in this direction. Any suggestions of the types of tests we might make and subjects to be tested would be welcomed. Indeed, we invite suggestions, input, and criticisms from our readers of how to proceed in the future. We would be pleased to hear from you.

—Paul Kurtz

The Skeptical Inquirer to Be Quarterly

We are pleased to announce that starting with the next issue the frequency of publication of *The Skeptical Inquirer* will be increased from semi-annual to quarterly. This will allow us to provide topical information on a much more timely basis. It will also enable us to publish a larger total quantity of editorial material critically examining claims of the paranormal. This decision is made possible by the great interest shown in the publication and the increasing volume of critiques being prepared and submitted. To help offset the added costs, the subscription rate for individuals will be raised to $12 a year. The next issue (Vol. III, No. 1) will be designated Fall 1978.

From Our Readers

The letters column is a forum for views on matters raised in previous issues. Letters are welcome. Some may have to be condensed.

The Nazca markings

In Ronald D. Story's article for this journal (Fall/Winter 1977) titled "Von Däniken's Golden Gods," the supposed "spaceport" near Nazca, Peru, is discussed as part of the highly profitable deception created by the imaginative hotel-keeper. As one who has visited the site several times and is familiar with the area and the artifacts, I should like to add something about this remarkable archaeological artifact.

The Atacama desert, where the "lines" and figures are located, is the fourth-largest desert in the world, and the driest of them all. The soil is peculiar, consisting of a light ochre-colored sand covered with a thin layer of oxidized material—gravel and coarser sand colored darker brown by millennia of atmospheric fallout of various kinds. But not changed from rain, since rain never falls in this area, the soil is remarkably like a huge drawing-board; any slight abrasion of the surface results in a permanent marking. Tire tracks and footprints remain on the surface year after year, century after century. The slight wind in the area barely changes the markings.

Only recently did the Peruvian government move to close off the area to casual traffic, since the Pan-American highway runs right through it coming south from Lima to the town of Nazca. This is indeed a blessing to the indomitable Maria Reiche, an elderly lady of German origins who has lived among the figures of the desert for decades. She has some pretty wild theories about the artifacts, but none so nutty as those that von Däniken would have us believe.

Mr. Story, quite rightly I believe, denies the validity of von Däniken's claims. But one point that appeared in his article needs clarification. He speaks of the fascination the figures had for Professor Paul Kosok, of Long Island University, who mapped and photographed them in the early 1940s. Kosok, unfortunately, was a victim of pseudoscientific methods when he came to the conclusion that "the largest astronomy book in the world" had been discovered in this desert. He came to this conclusion after noticing that at the time of the winter solstice in that hemisphere certain lines pointed directly at the setting sun. Now, it is not uncommon for ancient man to have constructed means of marking and observing (and therefore predicting) such important annual events. It was done in Egypt, in ancient Britain, and generally throughout the world. Equinoxes and other significant events were plotted and calculated as well. But Kosok was wrong.

Some years back, I appeared on a Boston radio station to talk about wonders I'd seen, and I mentioned the marvelous figures in the Nazca desert. The next day, I received a call from

Gerald Hawkins, who had performed such a fine piece of research on the constructions at Stonehenge. He wished to apply these same techniques —with computer assistance—to the Nazca figures. He did so, with a grant from the Smithsonian, and came to the conclusion that there was no correlation between the solstice points and the lines. His method was to select a few hundred lines, and set the computer to search for a relationship. None was found of any significance, though of course Kosok had been right in saying that several lines *did* point to the proper point; many hundreds did *not*.

The flaw in Kosok's work is evident. He had a theory, based upon a simple preliminary observation, and he set out to find other evidence to support his conclusion that there were other correlations. Of course there were, but the overwhelming amount of other non-aligned data was ignored; he simply assumed that the other lines, as well, signified similar correspondences that he was not aware of.

The figures at Nazca have another feature that makes von Däniken's farfetched theories seem even stranger. In photographs, unless there is some technical information available, or there are objects included in the camera view about which we know the general size, we cannot judge the scale of the artifacts. Indeed, many of the lines shown in the von Däniken books are only nine to twelve *inches* in width, and are scraped into the unique soil-structure some two inches deep! The lighter-colored soil is thus exposed, in contrast to the overlay. This makes for bright and contrasting drawings, of course. The larger rectangular figures are sometimes several hundred feet in dimension, but are merely delineated areas distinguished by shallow mounds of stones or scraped-in depressions.

We do not know who made the Nazca figures, nor why they were made, nor when. But such intriguing puzzles are best left to archaeologists, and not exploited as "miracles" left behind by inhabitants of flying saucers. The artifacts at Nazca are, as are the fortress at Sacsahuaman and the beautiful constructions at Coricancha in Cuzco, reminders that Man has a soaring spirit that enables him to envision, design, and construct such wonders. And in that fact alone is a miracle.

James Randi
Rumson, N.J.

Crespi's "treasures"

In 1971, we had the opportunity, before Erich von Däniken, to inspect the alleged gold and silver treasures he later claimed to be of extraterrestrial provenance. This opportunity came when getting acquainted with Father Carlo Crespi of the Santa Maria Auxiliadora church in Cuenca, Ecuador, who at that time was already in his eighties, and impaired of vision and hearing. Formerly a serious archaeologist, Father Crespi had with advancing age become a victim of his well-known scientific hypotheses of Egyptian origin of pre-Columbian art. He had purchased from local entrepreneurs the rather monstrous assortment of giant paddles, lyres, sarcophagi, bass fiddles, folio volumes, etc., allegedly *puro oro y plata* and inscribed with hieroglyphs, also featuring crude "African" images of elephants and "pyramids" as "proof" of their transatlantic origin. Obviously, local craftsmen had taken advantage of the aging padre's pet theories and funds. They were, however, not the only ones to take advantage of Father Crespi, who no doubt was easily persuaded by von Däniken to antedate the origin of his collection so as to further promote this author's "evidence" of galactic visitors

spawning culture down here on our planet. It is difficult to assume that von Däniken was so naive as to really believe this collection of brass and sheet-metal artifacts to be made of gold and silver, and the clumsy folk-images of "hieroglyphs," snakes, animals, and cheerfully smiling "gods" to represent code-writings by extraterrestrial intelligences, prehistoric fauna, and likenesses of galactic space-travelers. We took photographs of some of these treasures, and we also have a souvenir sample which the good Father gave us to have examined in Canada. It sadly confirmed our immediate impression of contemporary folk-art using brass, not gold, as material base.

As psychiatrists and anthropologists we may be permitted the comment that the real significance of von Däniken's enormous literary success, also with intellectual readers, has little to do with scientific, or even popular scientific, interests of the public. Rather it has to do with modern man's *anomie* and alienation and his hope that, although the old Gods are dead, some *deus ex machina* may soon step out of an extraterrestrial spaceship and with his suprahuman intelligence and technological power lead us out of the mess we created on this planet. Von Däniken must be credited with catering to this pseudo-religious need of industrialized man who looks up to the skies for instant socio-politico-economical salvation by fabulously smart and powerful little green men arriving in UFOs from outer space, just as in von Däniken's clever movie the cargo-cultists on a South Sea island gaze up to the clouds expecting the cargo planes to soon deliver the goodies.

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Louise M. Jilek-Aall, M.D.
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Creation-evolution controversy

Norman King's recent review (*Zetetic*, Spring/Summer 1977) of my book, *The Creation-Evolution Controversy: Toward a Rational Solution*, arrows in on discrediting my attempt to treat the subject in a fair and rational manner. The allegation that my efforts were disingenuous and my presentation riddled with sophistry predominates King's critique. Rather than analyze impartially the scientific, logical, and philosophic substance of the book, King prejudges and disappoints me, at least, with his emotionally tainted presentation.

The charge is made, or at least implied, that I am a pernicious Bible-toting religionist bent on beguiling my readership into some sort of intellectually perverse credo. On the contrary, however, nowhere in the 455 pages of the book do I make *any* religious appeal or even state my personal conclusion on the controversy. I do not harbor (contrary to King's innuendos and overt arrogations) a religious viewpoint I wish to protect. My interest is in the open and rational pursuit of truth. The book was an honest attempt to bring before the public the vast array of material that has recently surfaced that challenges evolution, as well as that which purports to give scientific credence to creationism. Pro and con arguments for both sides constitute the very substance of the book. . . .

Although I would have preferred someone less convinced of his or her position as my emendator, King's response actually substantiates much of the thesis of my book, as I will later detail. It is a curiosity to me that King, an admitted evolutionist, presumes the objective ability to critique a book intended to present both evolutionary and creationistic positions. . . .

It was important to me that readers see me more as a reporter

describing alternate belief systems than as someone spouting personal bias. I attempted in the book several devices to accomplish this, including the careful use of quotaton marks around comments and arguments made by evolutionists and creationists and balancing all arguments with what I felt were the best and most meaningful alternative ideas.

I welcome rational counterarguments to the logical and scientific material presented in the book. There is an abundance of information that deserves responsible rebuttal from competent scientists. But King, for all intents and purposes, avoids a response to the specific data and instead has taken the route of so many others who veer from debate of specifics to using their positional clout to demean, deride, and castigate any who may challenge their personal beliefs. . . .

It is correct that much more time is spent in the book presenting creationist arguments than evolutionary arguments. But this was not done on the sly as King implies. I prefaced the book with the following statement: "The presentation will assume the reader has a working knowledge of common creation-evolution arguments, especially the widely disseminated evolutionary proofs. To give balance, I will concentrate on evidence and reasonings—many that are creationistic in slant —which are not popularly known."...

There is almost an unbelievable inability on the part of many evolutionists to adequately debate the plethora of scientific arguments being currently waged against evolution. "Scientific creationists" boast their "winning" the various debates with noted evolutionists around the country. Does this evolutionist's inadequacy reflect insufficient research, insufficient exposure to debate of fundamental issues on origins, or an inadequacy in the theory? Might it be that open thinking on origins needs a reawakening? I think so, and it is with this premise that I wrote the book.

Lest my above claim that every specific comment about the book by King is an unfair arrogation, I will enumerate several examples.

The charge is made that "classical arguments for creation are offered without significant criticism." First, much of the creationistic argumentation is not "classical," but rather intimately tied with the recent findings of research from just the past few years. Examples include the use of information theory, probabilities related to DNA and protein sequences, and DNA repair mechanisms. Second, for every creationistic or evolutionary argument, I offered the best rebuttal my education and research could muster at the time of writing. Evolutionists pay so little attention to critics so very often that they evidently miss the creationistic arguments that are being offered. This could be one reason for my research turning up little if any refutation to much of what "scientific creationism" currently says. Or perhaps the theory is genuinely inadequate. Nonetheless, I would be more than happy to improve equipoise in subsequent editions, should King or others bring forth the needed information. King calls the statement that the evidence for evolution is incomplete and it can't explain life "glaringly ineffectual, gullible, and even pitiful." What he overlooks for some reason is the fact that my book is virtually permeated with quotes *by evolutionists* who themselves make the conclusion!

The attempt is made to show my "religious orientation" by pulling a statement by a creationist out of quotes and out of context (p. 82) and forcing a hell-and-damnation interpretation on it. The statement "Evolutionists will continue to exclude the alternative explanation of origins, a creator, at the

beginning then wonder why they do not find him in the end" is firstly a quotation of my hypothetical creationist, not me, and secondly *means* that when evolutionary bias prevents entertaining the creation alternative as a viable option at the beginning of research it is little wonder a creator is not found at the end of the research.

The inquisitorial tactics against evolutionary dissenters are real. Although the persecution is of course not physical, there is in some cases extreme mental-emotional stress put upon those disagreeing with vogue scientific thought. Again, simply note the tone of King's critique. That evolutionary thought affects social and political actions is, again, not something new or absurd as King implies. John Dewey wrote (my p. 3): ". . . the *Origin of Species* introduced a mode of thinking that in the end was bound to transform the logic of knowledge, and hence the treatment of morals, politics, and religion." Most of my chapter 1 contains information that further substantiates this. I made several references to demonstrate how it is thought by many that evolution has been used to justify war and even the atrocities of Hitler. . . .

I prefaced my discussion of dating methods that seem to show youth with the following: "Up to this point, what has our discussion of dating techniques established? Have we proven through our exposé of radioactive dating methods that the universe is young? *No*, we have simply shown that we can't be sure of any age dates. Assumptions are involved that don't allow us to prove youth or antiquity." I continue to stand behind this basic thesis. . . . King's statement that "no geologist could possibly accept any of his young-earth techniques" is a little presumptuous and arrogant to say the least. Does he presume the omniscience and authority to speak for all geologists and scientists? In actual fact, many of the techniques were devised by scientists!

I do not have "contempt for evolutionists and evolutionism," as King charges. I do have contempt for that which stands in the way of open rational investigation. The two are not necessarily the same. King cites as a supporting example of this "contempt" my statement in the book: "Few evolutionary scientists . . . realize evolution means the initial formation of unknown organisms from unknown chemicals produced in an atmosphere or ocean of unknown composition under unknown conditions, which organisms have then climbed an unknown evolutionary ladder by an unknown process leaving unknown evidence." This statement was in context part of a discussion in my chapter on methodology about the nature of evolutionary ideas. Are they science, or are they philosophy? How does King consider this statement contempt when (1) it is true, and (2) the statement is a synopsis of ideas taken from evolutionists themselves? Abundant examples are in my book. . . .

King says of my use of the term "biochemical predestination," that "that prejudicial label is clearly designed to mock the scientific concept and perhaps, as a bonus to his case, illustrate the presumed religiosity of evolution." Repeated charges such as this make me wonder if King actually read my book or is in fact well read at all in origin-of-life scientific literature. The concept, and the term "biochemical predestination," originates with evolutionists, and is not my cunning graphomania to show the "religiosity of evolution."

Further repetition of such examples of King's unfairness would be redundant. The interested reader is invited to read the book in context and compare it to King's critique. I believe

King's treatment presents an interesting substantiation of much of the emotionalistic bias seen among committed adherents to each side. I must, however, take some responsibility in bringing King to this type of reaction. Perhaps my dismay in finding so much bigotry and irrationality among those I held to be leaders in education and open rational thinking tainted my presentation. . . . I have taken King's reaction to heart and will attempt an edition in the future that will improve further equipoise. Nevertheless, I remain cognizant, steadily reminded, that some will react adversely regardless of one's efforts to be even-handed if ideas continue to be seriously entertained that are not in tune with the popular.

The difficulties in current naturalistic theories on origins are real and large. This is a conclusion reached not only by creationists, but by some bold and venturesome scientists and evolutionists as well. To see a genuine rethinking on origins at all levels of academia would be a delight and would certainly serve men's best interests. My book has now been used in several colleges around the country as required reading in several science classes and is currently being actively promoted by several secular, religious, and scientific organizations. If it serves to help in a rethinking on origins, it will have served its purpose. One thing is certain, not acquainting ourselves with data and ideas contrasting with our preferences may protect us from anxious moments of doubt but will hardly serve to enrich our minds or advance science.

R. L. Wysong, D.V.M.
Midland, Mich.

Norman R. King replies:

Wysong's reply to my review raises some pertinent issues. One of his major points is that I am biased in favor of evolution, and hence not capable of an impartial analysis. However, I can no more be accused for my admitted pro-evolution stance than Wysong can for his stance against *evolution. But my position is more straightforward—I make no claim to be presenting unbiased analysis. On the other hand, Wysong does make that claim, and this lack of forthrightness was one of my main complaints. Note that in his reply to my review he finally did admit to his anti-evolution bias. While that is not quite the same as being pro-creation, the result is the same. It is unfortunate that he had to be prodded into making his admission.*

Wysong also accuses me of emotionalism. If dismay and indignation are emotions, then I must plead guilty to this charge. What kind of a reaction did he expect from evolutionists? He publicly impugned the intelligence and rationality of every evolutionist and historical geologist, and then has the gall to protest the sharp response he receives, saying, "See? I told you they'd get emotional!"

Wysong did not, in fact, explain the evolutionist position, although he claims to have. And who is better able to determine that than an evolutionist such as myself? What Wysong actually did was explain the evolutionist position as creationists represent it. *That makes a big difference! If you are an evolutionist this misrepresentation of the theory will offend and enrage you; but if you are a creationist you will shake your head in disbelieving condescension at the alleged scientific folly of the theory of evolution and all associated ideas. Wysong seems to make it clear that evolutionists are idiots, and frankly if we evolutionists believed half of what Wysong pretends we believe then we would deserve the ridicule he so lavishly bestows upon us. But un-*

fortunately, you will not learn about evolution by reading Wysong's book. You will only learn what creationists say about evolution, and that, predictably, is rather uncomplimentary.

Wysong attempts to excuse himself in two ways. First, he maintains that he himself neither supported nor attacked the ideas he discussed—that he merely reported on arguments that would be voiced by representatives of the opposing sides in the controversy. However, his disclaimer of speaking through hypothetical creationist and evolutionist protagonists cannot absolve him of slanting his purportedly unbiased presentation to favor one side over the other. After all, as author of the book and of the remarks of those hypothetical fools, he—Wysong—is in charge of what they say. Wysong says that he gave the evolutionist a fair chance to respond to the creationist "tirade" in the summation chapter and that I was unfair to criticize him for the imbalance in his presentation. What could be more absurd? The fact that my review was so caustic demonstrates fully that a real *evolutionist is not the incompetent, naive patsy Wysong would have us believe he is.*

Second, Wysong protests that he is not an expert in all of the scientific fields he discusses, and that he only used the information available to him. Thus, we are told, he cannot be blamed for writing in areas in which he has no special knowledge, and Wysong implicitly agrees with my conclusion that the book is not a competent commentary on the scientific issues.

Wysong, however, claims to have used the latest findings of science in formulating his case against evolution. He used modern information theory and probability, he says, and he did this in relation to arguments on the origin of life and DNA. But he fails to acknowledge that the necessary chemical processes do not operate in accordance with the strict laws of chance. Therefore, information theory and probability are not directly applicable. If he had pointed that out he might have helped banish a widespread misconception. Instead, he capitalized on that misconception, inappropriately using it to his advantage. He ridicules the fact that certain critical organic molecules are more likely than others to form spontaneously and abiotically by mockingly referring to the concept as "biochemical predestination." Actually, that phrase represents the title of a book by a biochemist in which the abiotic origin of life is discussed. It is a catchy phrase used light-heartedly by its author. But it is a sarcastic barb when Wysong uses it. The context makes the difference. Wysong cannot excuse himself, as he tries to do in his reply, simply by attributing the phrase to an evolutionist. Wysong devised the context and tone of his reference to it, not the evolutionist.

With regard to dating techniques, Wysong accuses me of claiming omniscience for myself. How could I know, he asks, that no geologist could accept his young-earth dating techniques? To this question I need only repeat one of the examples I chose for my review, and let the reader decide on Wysong's sincerity. As a veterinarian, Wysong has considerable training in the life sciences. Yet he doesn't understand why there are no trees older than about 6,000 years. Really, now! How would you feel if your doctor told you that he saw no reason why you shouldn't live to be 300 years old?

I indicated places where Wysong's logic was faulty, citing specific examples. Nevertheless, Wysong accuses me of avoiding specifics. Never mind—that's not important. My point here is that I did *explain why his effort is not a competent commentary on the scientific issues, and I* did *demonstrate why it cannot be regarded as a contribution*

to rationality. Wysong has not addressed himself to the specific scientific, philosophic, and logical shortcomings that I pointed out in my review. Consequently, my evaluation stands, and it is Wysong *who avoids debating specific issues, not me.*

—Norman R. King

UFOlogy

Your embryonic and obscure journal recently published a piece (Spring/Summer 1977) by Jim Oberg concerning my book *UFOlogy*. He purports to show that it is unscientific and, consequently, unsuited to the attention of your readers. Yet the book has been widely acclaimed in this country and abroad, not by the so-called UFO buffs but by highly educated experts in numerous fields. It has also been adopted as required reading or as a text in about two dozen courses at the college level. Hence, the disparate and lopsided diatribe by Oberg, masquerading as a book review, spawns several questions:

Is he capable of understanding the book? Has he displayed any evidence that he did? Is he thoroughly acquainted with the subject? Where are the results of his own research? Is he merely stroking the avowed prejudice of your organization? Is he mounting a line of government propaganda? Is he an undercover wolf in Air Force clothing? Does he seek to inherit the moth-eaten mantle of Menzel (rest his soul), Klass, and Sagan?

There are simply too many loose ends in Oberg's situation for me to take him seriously. Your more intelligent readers should disregard his analysis, procure a copy of the book, and study it for themselves. Should they fail to receive a rewarding education on UFOs, by their own appraisal, they are welcome to send me the book, along with a copy of this letter, for a refund.

My response to Oberg can be summarized by paraphrasing a famous line from Shakespeare: "Methinks thou doth protest too much."

James M. McCampbell
Director of Research,
Mutual UFO Network, Inc.
Belmont, Calif.

James Oberg replies:

I am delighted to see that the author realizes all of my criticisms are unanswerable. He responds in the only possible way: a smokescreen and a diversion. By all means, readers should take advantage of the author's offer to fully refund the price of the book if unsatisfying.

—James Oberg

Creationist textbooks

Writer Charles Spitz (Letters, Fall/Winter 1977) may have overlooked an important point in the creation-evolution controversy. He implies that creationist textbooks are used only in "bible-schools," adding, justly, how sad it is "children are programmed with this garbage."

If only bible schools used creationist texts, society might be able to tolerate the small percentage of their scientifically illiterate graduates. But the main isssue is that these texts (Book Reviews, Spring/Summer 1977, p. 80) are carefully produced for use in *public* schools. Successes I've been able to trace include adoption of *Biology: A Search for Order in Complexity* by the Dallas School Board (January 1977), the Columbus, Ohio, school district (1976), and a small district in Indiana where a judge ruled the above "religious" and ordered it removed (April

1977). Meanwhile, at least eleven state legislatures are, or have considered, requiring such texts to be adopted, if evolution is also taught.

Some time back, I traced the use of films made by the Moody Institute of Science (Whittier, Calif.), a subsidiary of the Moody Bible Institute, and found 1,900 U.S. public school *districts* used them, some daily, in junior high and high school biology classes.

California is a special case. First, its public schools enroll at least 10 percent of all public school children in the nation. Any text adopted for the state's "science matrix" is a financial triumph for its publisher. Two members of the California Board of Education are creationists. I sat in horror through several sessions of the state board last June, listening to major publishers either agree to alter their texts, or withdraw them. Time-Life publishers refused to make alterations and their whole series was rejected. Alterations ranged around a board member's objection to treating evolution as "proved." Statements like ". . . there is evidence that . . ." were changed to ". . . *some scientists assume that.* . . ." One lone scientist, on hand to defend the draft of the state's new "Science Framework" (a policy guide), arose and stated in effect: "I will *not* say 'scientists assume molecules are composed of atoms,' we *know* they are!" It's worth noting that any text bowdlerized into acceptability in California is likely to be used throughout the nation.

Bette Chambers
President, American
Humanist Association
San Francisco, Calif.

N-rays, UFOs, and "pathological science"

I was interested to see the article by Philip Klass treating N-rays and UFOs as examples of the same sort of phenomenon (Fall/Winter 1977). This is not, of course, the first time that such a connection has been made. Irving Langmuir gave talks over a period of many years in which he grouped such topics as N-rays, mitogenic rays, the Allison Effect, flying saucers, ESP, and so forth under the heading of "pathological science" (see Albert Rosenfeld, *The Quintessence of Irving Langmuir*, Pergamon, 1966; chapter 24).

It is not perhaps sufficiently well known that a transcript of Langmuir's last such talk is available as Report No. 68-C-035 in the Technical Information Series of General Electric (Research and Development Center, Schenectady, N.Y.). In fact such technical reports are bibliographically obscure to such a degree that it would be a valuable service if a journal such as *The Skeptical Inquirer* would arrange with GE to reprint the transcript. In this talk Langmuir proposes six symptoms of pathological science:

1. The maximum effect that is observed is produced by a causative agent of barely detectable intensity, and the magnitude of the effect is substantially independent of the intensity of the cause.
2. The effect is of a magnitude that remains close to the limit of detectability; or, many measurements are necessary because of the very low statistical significance of the results.
3. Claims of great accuracy.
4. Fantastic theories contrary to experience.
5. Criticisms are met by *ad hoc* excuses thought up on the spur of the moment.
6. Ratio of supporters to critics rises to somewhere near 50 percent and then falls gradually to oblivion.

It is important to note that in general "pathological science" does not refer to the work of crackpots or of deliberate frauds; in many cases these phenomena are claimed to have been observed by respected scientists who have no conscious bias (Blondlot, Rhine, and many others). Moreover, as with any diagnostic aid, the presence of one or several of the symptoms does not prove a case of pathological science; however, it may be taken as an indication that the reports need careful scrutiny.

Points of connection with other claims of paranormal phenomena are no doubt obvious. However, it may be also of interest to examine recent cases of questionable or controversial observations in the hard sciences for these symptoms. One example would be "polywater" (indeed this case was also compared to N-rays by J. J. Bickerman, *Nature* 245: 343, 1973). Other examples may be the alleged detection of gravity waves (see *Science* 177: 506, 1972) or of quark tracks in cloud chambers (McCusker and Cairns, *Phys. Rev. Letters* 23: 658, 1969; rebutted by Adair et al., *Phys. Rev. Letters* 23: 1355, 1969) and memory transfer *via* injection of ground-up animals or even of simple proteins (for the former, the works of J. V. McConnell; for the latter, the works of G. Ungar). The reader may find it interesting to add his own favorite examples to this list.

Finally, it is interesting that Langmuir's point 6 does not hold exactly for most claims of paranormal phenomena: belief in ESP, astrology, and other phenomena does increase and then decrease, but only to revive at a later time.

Acknowledgment:
The General Electric Technical Report cited here was brought to my attention several years ago by Cynthia W. Peterson.

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N-Rays continued

In regard to the article by Klass on N-Rays, an interesting article by Robert T. Lageman in the *American Journal of Physics* (Vol. 45:3 March 1977, pp. 281-284), corrects some errors in the usual accounts. In particular:

1) "Confirmatory" papers were published by investigators outside France. It is often said (incorrectly) that N-Rays were seen only in France.

2) Blondlot continued as professor of physics at Nancy for six years, retiring in 1910 with emeritus status. He died in 1930 at the age of 81. He apparently was in good health and active during his retirement, publishing editions of his textbooks and managing his affairs.

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Martin Gardner is the mathematical games columnist for *Scientific American* and the author of such books as *The Ambidextrous Universe* and *The Relativity Explosion.*

Michel Gauquelin is director of the *Laboratoire D'Etude des Relations entre Rythmes Cosmiques et Psychophysiologiques* in Paris.

Philip J. Klass is an aerospace editor in Washington, D.C., an investigator of UFO reports, and author of *UFOs Explained.*

John M. Kmetz is director for research of the Science Unlimited Research Foundation, in San Antonio, Texas.

Paul Kurtz, chairman of the CSICP, is professor of philosophy at the State University of New York at Buffalo.

Robert L. Morris is lecturer in parapsychology, Tutorial Program, University of California at Santa Barbara, and a past-president of the Parapsychological Association.

James E. Oberg is a space specialist in Houston and a writer/lecturer on astronomy and space science.

James Randi is a professional magician, a member of the executive committee of CSICP, and a well-known investigator of the claims of "psychics."

Robert Sheaffer is a computer-systems analyst and science writer. He, Philip Klass, and James Oberg are members of the CSICP's UFO subcommittee.

Scientific Consultants

These scientists and scholars have agreed to serve as scientific consultants to the Committee for the Scientific Investigation of Claims of the Paranormal.

Theodore X. Barber, psychologist, Medfield Foundation

Richard E. Berendzen, professor of astronomy, provost, American University

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*To prepare bibliographies of published materials that carefully examine such claims.

*To encourage and commission research by objective and impartial inquirers in areas where it is needed.

*To convene conferences and meetings.

*To publish articles, monographs, and books that examine claims of the paranormal.

*To not reject on a priori grounds, antecedent to inquiry, any or all such claims, but rather to examine them openly, completely, objectively, and carefully.

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